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PLANNING THE HOSPITAL

For Convenience and Economy in Supervision Routing and Operation

By Oliver H. Bartine, *Hospital Consultant*

MEDICINE and surgery have made wonderful strides in recent years, but the planning and construction of hospital buildings have made equally, if not greater, progress. Today the architect is much better qualified to plan buildings meeting the increasingly varied requirements of hospital service.

At the time of the building of the Hospital for the Ruptured and Crippled (New York City, 1911) a member of the building committee desired to obtain literature bearing upon hospital planning that he might have the opportunity of studying the problem. But little literature of a helpful nature was then available. Within the few years since intervening there has been produced an abundance of literature which will be found most helpful to the building committee.

The superintendent and building committee of a proposed hospital should possess all of the information possible on the salient features of other hospitals in order to enable them to analyze their problem and to discuss it intelligently with the architect.

A number of years ago the erection of a large hospital was undertaken in one of the largest cities in the country. The steel construction was up five stories before the hospital's head official personally undertook a detailed study of this particular hospital's problem. A careful study of the plans followed by the building committee developed flagrant errors in plan of such a nature as would constitute serious hindrances to the proper operation of this hospital. Even at this late stage we were able to make several hundred changes in the plans and today this hospital is known as the modern hospital of that city and state.

This paper is not intended to enter into the general planning of a hospital but rather aims to indicate a number of important features which should be considered with special care in planning the hospital for efficiency and economy of operation.

In many hospitals the entrance is a place of great confusion and in others we find in the entrance an air of refinement and the appearance of orderliness. With due consideration of the particular work the hospital is to perform the entrance should be so planned that it may be utilized with the least confusion and with the least number of employees possible. For instance, a satisfactory arrangement is often found to be the placing of a reception room at each side of the main entrance, one for people interested in the work of the hospital, and one for visitors to patients, with a bureau of information located convenient to both while overlooking the doorway and interior hallway. Thus the clerk at the bureau of information controls the situation as a whole, and efficiently directs and distributes all visitors. This clerk in a moderate sized hospital may also operate the telephone switchboard.

It is regrettable that greater consideration is not given to this matter of the conduct of the main entrance of the hospital. Some authorities feel that the method prevailing at hotels is well worthy of adoption.

When one is harshly received upon arrival at the hospital a poor impression is made which it is difficult later to eradicate. In visiting the hospital at Lancaster, Penn., recently, I was received by a lady whose sole duty it is to receive and assist visitors. I observed her work for some time and left the hospital with the most favorable impression concerning this matter of reception. The rich and poor were treated in the same cordial and kindly manner.

The policy of placing the superintendent's office directly at the main entrance to the hospital should be avoided. It may better be located in a quiet section of the building, near the offices. Thus the superintendent will not be constantly disturbed, but he may, with convenience, have complete control of the situation. He must, however, be conveniently located for access by those desiring to interview him. The superintendent's duties are of paramount importance and only if his office is properly located will he have the necessary time for the study of the larger and more important aspects of his hospital,

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while maintaining control of the general details.

The record room is more and more becoming an important adjunct to the hospital. It should be conveniently located adjacent to the general office and it should have such facilities that the physicians may be able to study the history of any case without being disturbed.

Ample provisions should be made for the social service department which is today one of the important adjuncts of the hospital. It must be available for both incoming and outgoing patients, also conveniently situated for out-patient department cases.

THE out-patient department, a most important and ever growing feature of hospital work, should be so planned that when a patient is received therein the routing of the patient may be accomplished with the least confusion possible. The necessity for passing through the waiting room in going from one room to another in this department is to be avoided and the outgoing patients should not be required to mingle with the incoming patients.

Too often the boiler plant is placed directly beneath this department and in warm weather the heat becomes unbearable. A separate building for the boilers is very desirable, and with it the laundry may be combined.

The X-Ray department and laboratories should be accessible to both the indoor and out-patient departments. It should be so planned that the transporting of an indoor patient or a specimen through the out-patient department, or vice versa, is unnecessary.

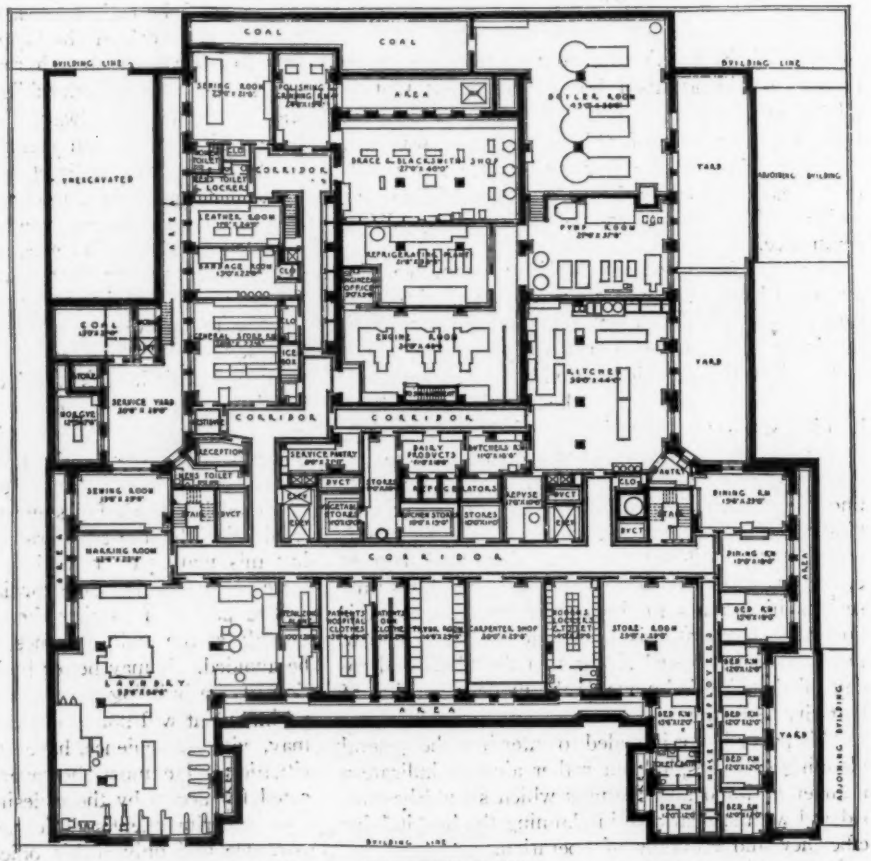
In an out-patient department recently planned by an architect in co-operation with the writer, provision has been made for the use of this department during the evening as a venereal disease clinic, the remainder of the clinic being closed.

The roof should be easy of access and should be so planned that the patients may enjoy its use in all kinds of weather. This purpose may be accomplished by providing a solarium, or by providing a shelter over a portion of the roof, or both.

By planning the various floors, and even the wards, as distinct units entirely closed off, together with the employment of the best method of sound-proof construction, the many sounds and noises incident to hospital operation will be confined to the department in which they originate.

The kitchen should be so located and planned as to serve conveniently all departments with the least labor and effort possible. The receiving storeroom and the refrigerators must be ample and in direct connection with the kitchen, so arranged that all supplies may be properly supervised and be handled in a manner avoiding all duplication of effort.

Whether the service shall be cafeteria, preparation of trays or dishes in the kitchen, or whether the food shall be sent in bulk to the ward pantries and service rooms, are problems to be considered. This depart-



BASEMENT PLAN

HOSPITAL FOR THE RELIEF OF THE RUPTURED AND CRIPPLED, NEW YORK

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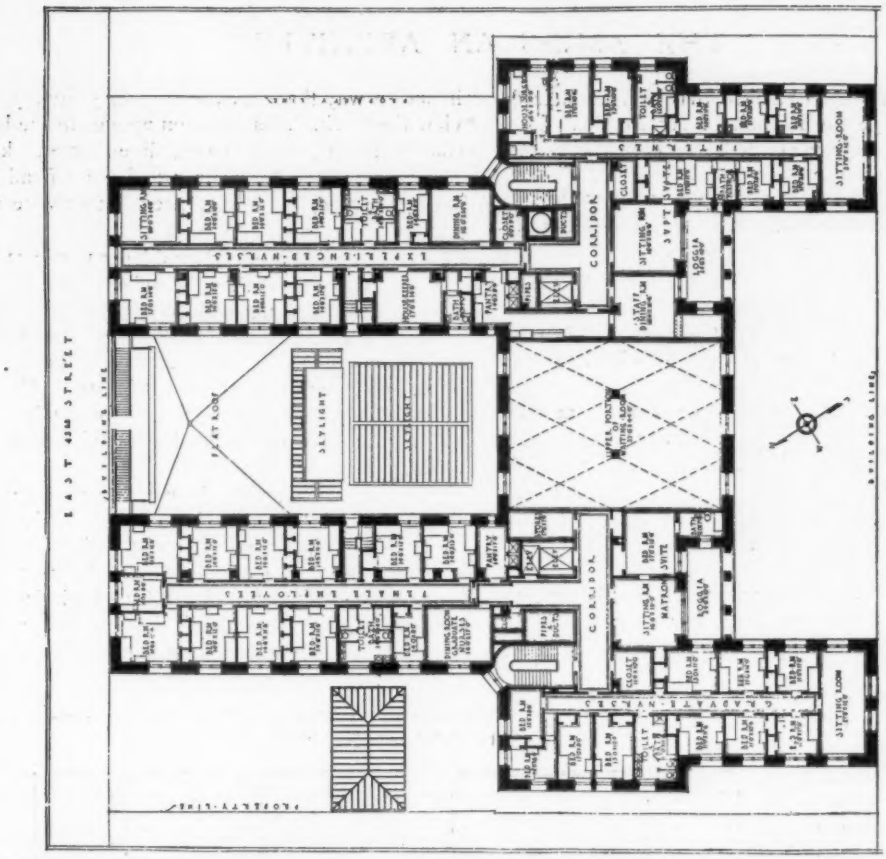
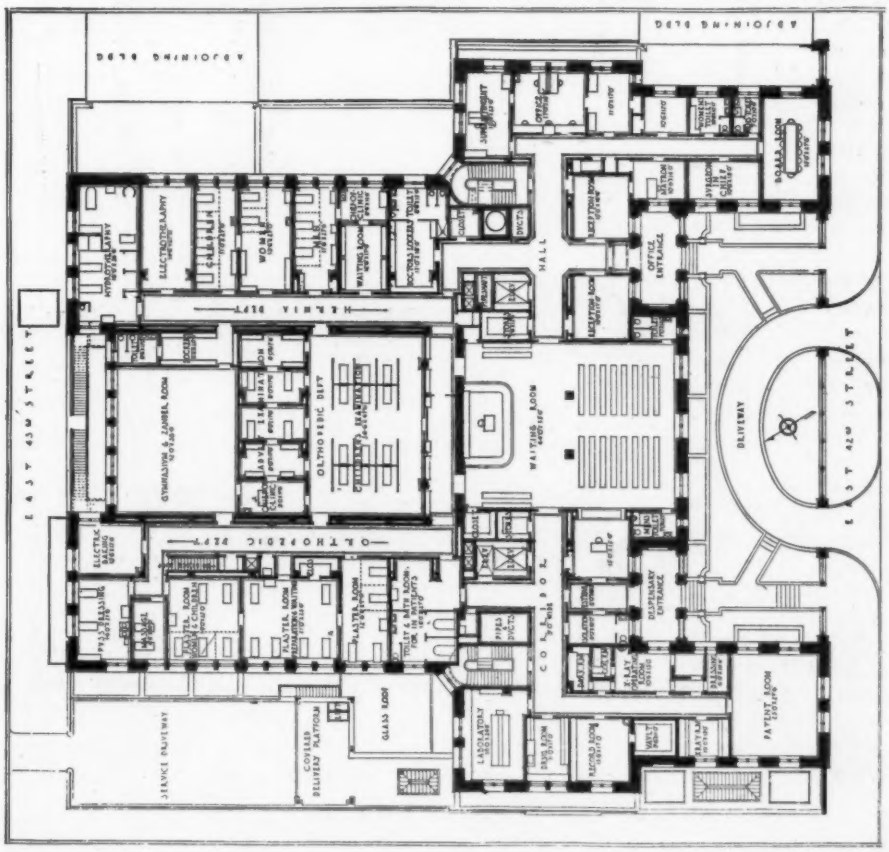




HOSPITAL FOR THE RELIEF OF THE RUPTURED AND CRIPPLED, NEW YORK

YORK & SAWYER, *ARCHITECTS*

ment may well be so planned that if it be later decided to change the method of service this can be done within the space allotted. Daylight and ventilation are of the greatest importance in the kitchen.

The ground floor or basement will usually provide the space which may best be utilized for this department, and at the same time provide for economy in operation, while the proper utilization of the remaining space in the hospital is not interfered with. The kitchen and its auxiliary rooms must be planned for the easiest and least possible handling of supplies and foods.

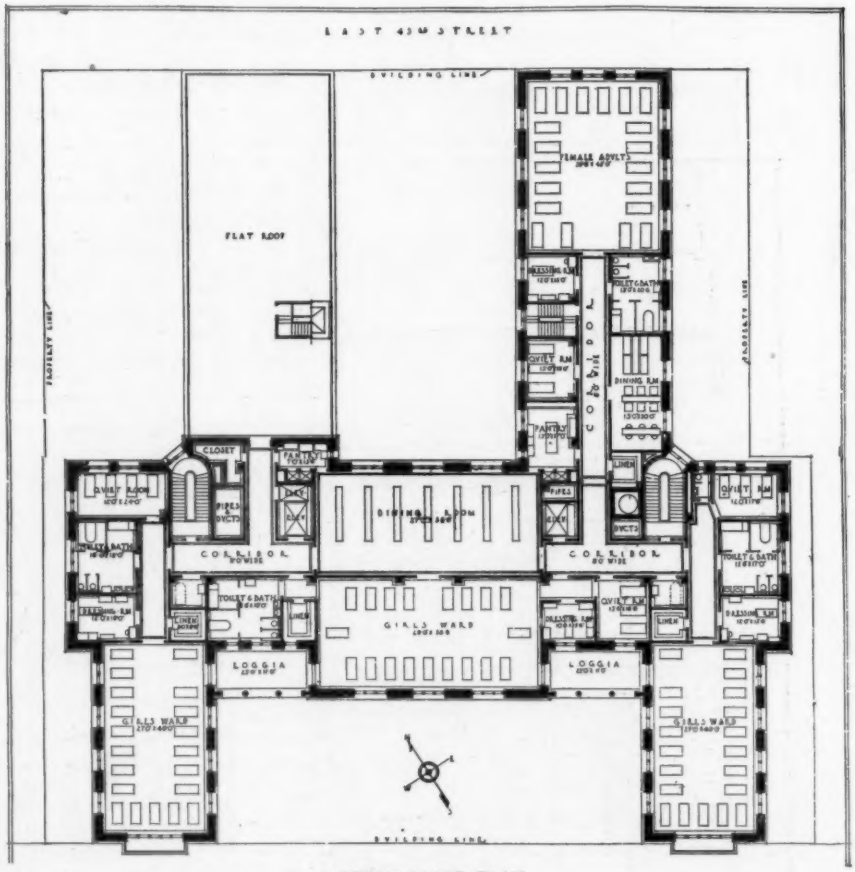
The personnel existing or to be required must be carefully considered in this as in many other details of hospital planning. For instance, shall the dishwashing be done in a central dishwashing room fully equipped with suitable apparatus, or shall it be done in the pantry of each ward, dining room and service kitchen? In some hospitals a maid will necessarily be on service in each department with sufficient time to perform this service. In other cases it will be found that additional help will be required for the washing of dishes in the various departments and in such cases the central dishwashing room will be found essential to a saving in the number of the help and an important factor in reducing operating costs.

The general store room is properly located only when placed near the receiving department. It should be so planned that only the employees of the hospital actually engaged in the store room will know of the supplies on hand. Too frequently will the hospital employee present a requisition for supplies, glance around the shelves, pass word of a large quantity of certain supplies on hand, and thus, in effect, invite requisitions for supplies not actually required. It is quite as easy to plan the store rooms in such a way that only the necessary employees may view the stock. This situation applies to the hospital supply rooms, drug room, linen room, kitchen, storage rooms, etc. The provision of additional future storage space is of great importance also.

THE laundry rooms should be easy of access and be so planned that the soiled linen arrives at the receiving room, passes on to the washers, wringers, dryers, mangles and ironers, and thence to the assorting, repair and delivery rooms, all in a logical order without crossing of paths. The laundry work should be so routed that the employees will do their work with the least possible traveling and effort.

Although this article is not intended primarily to point out economies in hospital equipment, I would like to indicate the opportunities for savings in replacements of glass and porcelain ware offered by metallic equipment. In order to eliminate rust, the objectionable feature of nickel or other plating,

(*Continued on page 83*)



THIRD FLOOR PLAN

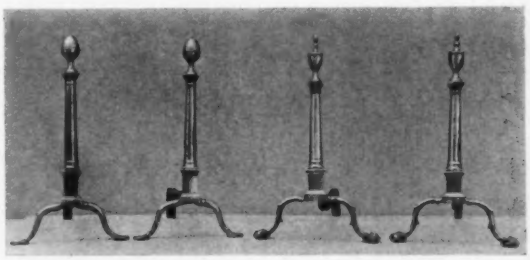
HOSPITAL FOR THE RELIEF OF THE RUPTURED AND CRIPPLED, NEW YORK

YORK & SAWYER, *ARCHITECTS*

GROUP OF FIXED DECORATIVE ACCESSORIES AND METAL-WORK OF THE XVII AND EARLY XIX CENTURIES IN AMERICA. THE MANTEL TO THE LEFT IS OF THE THIRD QUARTER OF THE XVII CENTURY; THAT ON THE RIGHT FROM THE FIRST DECADE OF THE XIX CENTURY

A SUMMER EXHIBITION of AMERICAN METAL-WORK and FIXED DECORATIONS AT the METROPOLITAN MUSEUM of ART

THE fittings and appointments of the American house of the eighteenth century were amazingly complete and varied. Then, as today, the standards of living controlled largely each householder in the quality and variety of his household equipment, but the customary life of the period rendered peculiarly uniform the types of these fittings. Aside from the movable furnishings of the house—furniture, textiles, glass, and silver—there were the many details of more or less fixed decoration which really are a part of the architectural scheme of the finest craftsmanship of the times. To show a group of this latter material, a small exhibition was recently arranged in the north end of Gallery H 22 of the New York Metropolitan Museum of Art.



BRASS ANDIRONS OF THE LATE XVII AND EARLY XIX CENTURIES. LENT BY W. GEDNEY BEATTY

The objects shown were chosen chiefly for their interest and value to the house-builder who is following today in the early American tradition. Interesting treatments of door-hardware, leaded glass transoms, and side-lights, of fireplace and lighting fixtures have been gathered together not with the idea of showing every variation of any type but to include chiefly those pieces which contain good suggestions for modern application and use.

The craft of the metalworker has supplied many of both the fixed and the movable appurtenances of the colonial house. About the entrance door is concentrated a pleasing group of wrought or cast brass, bronze, iron pewter, or lead. Among these fittings the knocker is perhaps the most important, for upon it was expended the chief elaboration. From the beautifully modeled S-knockers of the middle of the century to the more sophisticated delicacy of the bail-knockers of Adam or Empire influence the same high quality of design and execution is seen. With these knockers were used fine locks of brass or iron, strap

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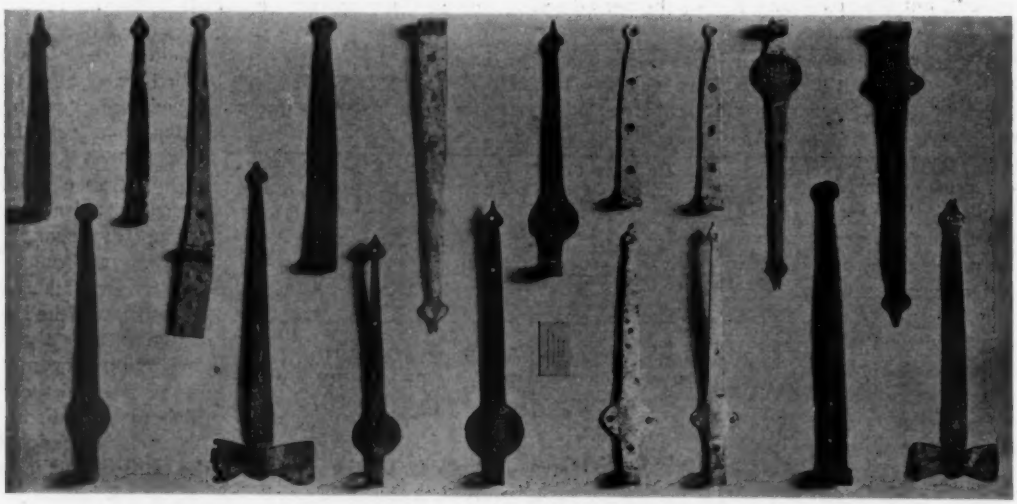
AMERICAN DOOR KNOCKERS IN BRASS. 1790-1810

hinges of various types, and late in the century transoms and side-lights of glass with divisions of lead or pewter in skilful designs. The interior doors were treated with no less careful attention and locks and latches of brass and iron and hinges of the strap, H, and H and L varieties were adjusted to the scale and weight of the woodwork.

About the fireplaces was gathered much of the finest metalwork in the house—andirons, shovels and tongs, cranes and fenders—which form essential elements in the design of the fireplace.

LIGHTING fixtures form a department of beauty and variety in themselves. It must not be thought that the lighting of the more pretentious houses was limited to the simpler fixtures made in the Colonies. Many of the more elaborate examples of sconces and chandeliers were imported. Brass and cut-glass lustres, sconces, and candelabra found a place in many of the handsome interiors. Until well along in the eighteenth century most of the illumination came from portable lights of several sorts. Some of these portable lamps, candlesticks, and candlestands are shown for the suggestions which they may hold for application to modern use. Toward the end of the century when candles were less of a luxury

A GROUP OF FIXED AMERICAN DECORATIVE ACCESSORIES



GROUP OF WROUGHT IRON HINGES OF VARIOUS TYPES OF THE XVII CENTURY FROM NEW ENGLAND AND NEW AMSTERDAM

and the economic prosperity of the colonists allowed them more leeway in their study of decorative effects, sconces and chandeliers were used for general lighting.

Among the wall and ceiling fixtures shown are the simple lanterns and Betty lamps, girandoles of wood or composition in which silvered glass used as a reflector gives a sparkle at points on the wall, and hall lights of thin blown glass suspended on chains from the ceiling.

In choosing the objects to be shown, the effort was to limit them to work which bears the stamp of American production. A number of examples of door-hardware—hinges, locks, knockers, and handles—were lent by W. Gedney Beatty, architect, and Alexander McMillan Welch. Mr. Beatty sent several interesting pairs of andirons. With these exceptions, the material is from the permanent collections of the Museum, some of it never having been shown.

Linking Art with the Factory

WITH the object of stimulating the interest of the manufacturing community in the application of artistic designs to industrial uses the Industrial Art Committee, formed under the auspices of the Federation of British Industries, has issued an interesting report, in the course of which it outlines a scheme for bridging the present gap between the art school and the factory. There is a growing recognition of the fact that owing to the predominance of machine production the personal touch of the master craftsman has been lost, while manufacturers experience difficulty in finding designers who have not only artistic qualifications but a practical capacity based on first-hand knowledge of the requirements of industry and its technical processes.

The committee include representatives of the silk, glass, lace, fancy goods, carpet, pottery, jewelry and silversmith, decorating and printing trades. One of the recommendations of the committee is that arrangements should be made by manufacturers to enable their designers to take short "refresher" courses at the college. The course should be for one, two or three months continuously, or, alternatively. A course might allow for alternate periods of residence at the college of a fortnight at a time, the student returning to the works in the intervals. In this way he would be enabled to keep in touch with his industrial work and at the same time the inconvenience to his employers would be mitigated.

The report has been approved by the executive committee of the Federation of British Industries, which has authorized the art committee to make the necessary arrangements with the Royal College and with the trade associations concerned for carrying the scheme into effect. The necessity for a general improvement in artistic design is becoming forced upon British manufacturers by the growth of foreign competition in the cheaper lines of wares, which has the tendency of compelling British producers to specialize more and more in high quality goods. The action taken by the federation is undoubtedly a step in the right direction.

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THE FOURTEENTH CENTURY BANQUETING HALL, BRINSOP COURT, HEREFORDSHIRE

ENGLISH HOMES of the NORMAN and PLANTAGANET PERIODS*

THE study of the domestic life of the people during medieval times has always had a fascinating interest. Especially for America as relating to England's castles and baronial halls, the favorite settings for song and story. Some writers have, to a considerable extent, set down the details of the fine buildings that were the homes of England's nobility and have woven about them a glamour which, while not always one of accuracy, has none the less an artistic interest. At one time or another, pictorial presentation of these rare old buildings has been made, but at no time has it been more completely and beautifully done than in a volume just issued. The author, H. Avray Tipping, has approached his task finely equipped, and the work as completed, is one that will appeal to every architect in this country. In fact, it may be safely stated that this sumptuous book will become an essential part of every architect's working library. The period covered is that of Norman and Plantaganet or from 1066 to 1485.

Twenty-five major buildings are illustrated, comprising a remarkable series of more than four hundred illustrations.

"There was," states Mr. Tipping in his introduction to this work, "a housing problem in medieval times and, if the laborer ended the period as he began it, with little more than a rough timber shelter set about a masonry hearth, the landowner in the country and the merchant in the town made large strides in the commodiousness of their homes." So long a time has elapsed since this period that most of these stately buildings are but roofless, picturesque ruins. Those that have through care survived, have through succeeding years been so altered or "restored" that it is not easy to conceive exactly how they were planned or how the people lived in them.

But sufficient remains to enable the student and close observer to rehabilitate these fine old buildings so that, with reasonable accuracy, we may learn of the domestic life and the architectural tendencies of this period.

"By comparison and contrast, we are enabled," writes Mr. Tipping, "to mark the evolutionary

*English Homes—Period 1, Vol. 1—Norman and Plantaganet, 1066-1485. By H. Avray Tipping. Full cloth, 340 pp., size 11½ x 15. New York, Charles Scribner's Sons; London, Country Life and George Newnes, Ltd.

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EAST SIDE OF KEEP AND TUDOR BRIDGE, HEDINGHAM CASTLE, ESSEX, ENGLAND

NORTH ELEVATION OF THE FIFTEENTH CENTURY HALL AT COKER COURT

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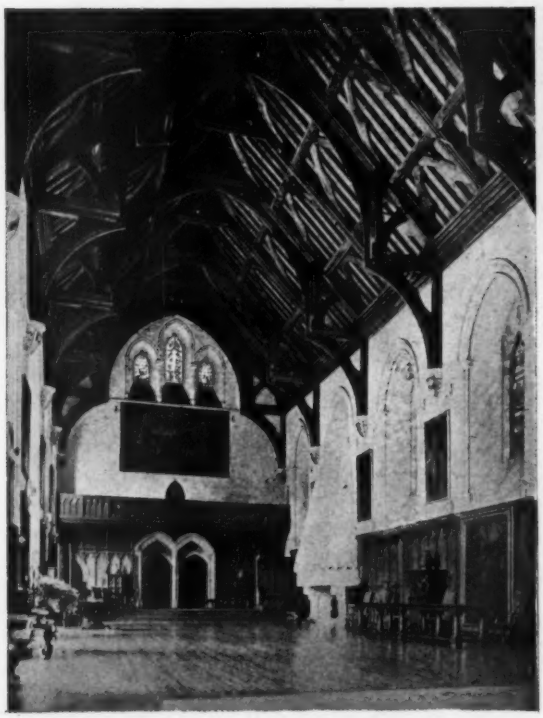
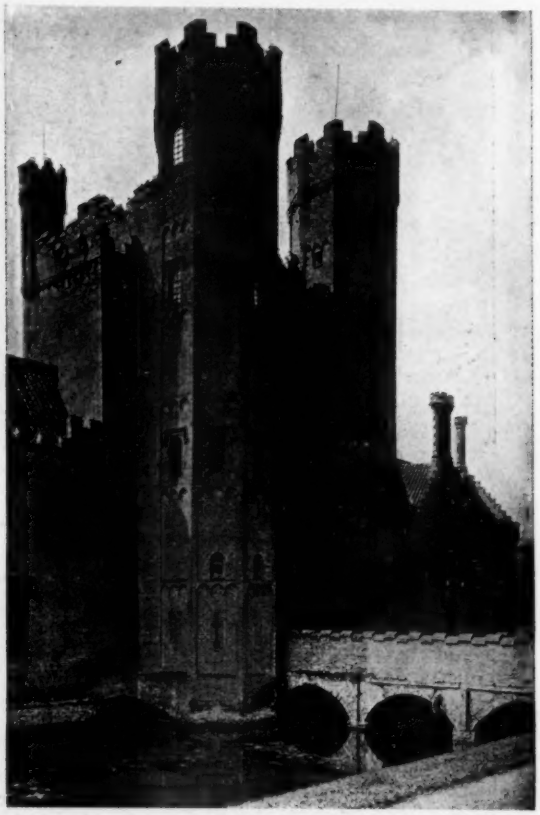
LOOKING DOWN THE STAIR FROM THE KEEP, ARUNDEL CASTLE, SUSSEX



THE GREAT HALL, ARUNDEL CASTLE, SUSSEX

changes in the planning and designing of such domiciles and the differences arising from the builder's purpose, purse and personality."

Beginning with a period when every man's house was not only his castle, but a fortress, within whose widespread area his family and retainers found shelter from assault and safety during periods of petty "wars," and continuing to that time when there was a more peaceful and more domestic people, the evolution and the castle and keeps indicated the social conditions. In the presentation of these buildings in their approximate chronological order, the reader of this book may easily trace this progression. He will find, however, throughout, that the hall was the dominating feature of all these buildings through this period of approximately four hundred years.



OXBURGH HALL, NORFOLK. THE GATE HOUSE

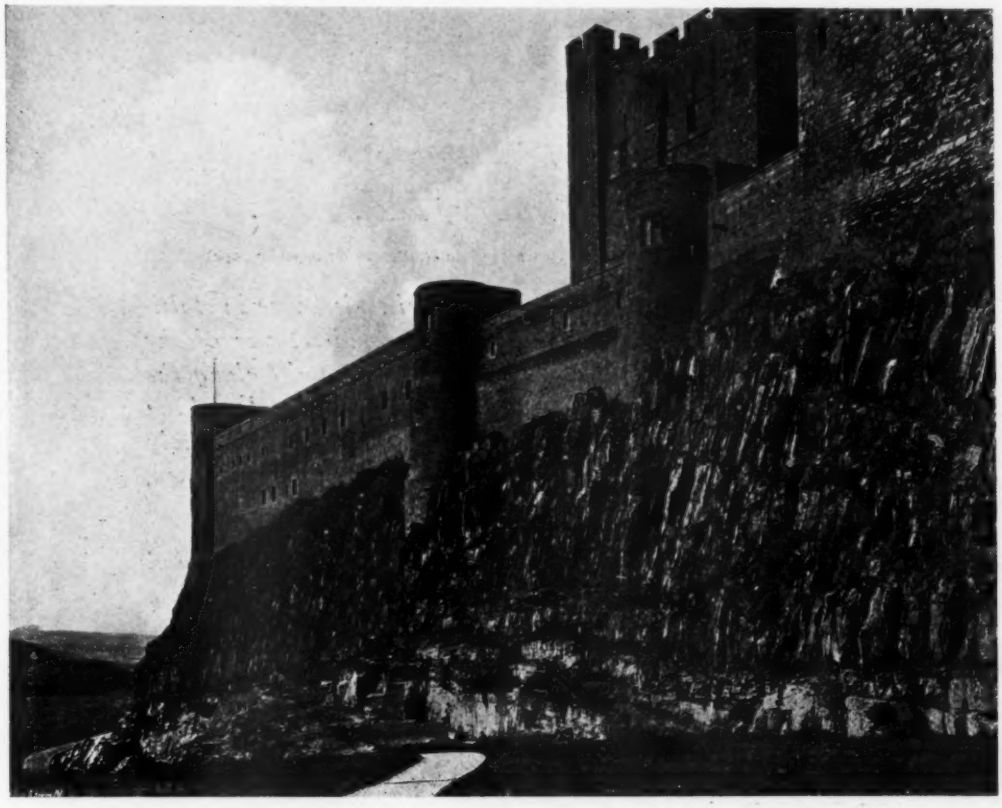
An example of fifteenth century English brickwork

"Although," states the author, "the hall stood almost alone at the beginning, at the close it was no more than the center of a group, yet its importance, its uses, its position, its arrangement, all remained permanent in principle and little affected even in detail from the day of Senloe to that of Bosworth."

The character of the hall indicated the wealth, the

high state or importance of its owner. It was here he sat in state to receive his guests or to distribute his favors. It was, in a sense, the high court where justice was dealt out in accordance with the customs of the times. From the hall sallied forth on many occasions the lord of the manor and his knights, bent on some warlike foray, and it was to the hall he returned, either victorious or to find in its massive wall protection from besiegers. Many of these stately halls, in most of their original architectural form, remain today, and it is in a study of their plan and architecture that we shall be able to learn the domestic development of this period.

This book affords a fine opportunity for such study. It enables the reader, both through its text and the finely made photographs, to secure a comprehensive and intelligent idea of the growth and development of architecture through more than four hundreds years of the most picturesque period of English history.



BAMBURGH CASTLE, NORTHUMBERLAND, SEEN FROM THE BARBICON

Portico of "Homewood" Baltimore, Md.

(See reproduction of original sketch by Otto R. Eggers on opposite page)

WHEN Charles Carroll, Jr., built his house in Baltimore in 1804, *he had for an architect one of the carpenter-architects who so cleverly built along the Atlantic seaboard during the close of the eighteenth and the opening years of the nineteenth centuries. Unfortunately the names, with few exceptions, of these men are unknown, and equally unfortunately in the present instance.*

The subject of Mr. Eggers' sketch has long been regarded as one of the most valued architectural heirlooms. It is a satisfaction to know that it will be carefully preserved. Now the property of Johns-Hopkins University, it is safe to assume that by no chance will this architectural relic be permitted to fall to decay.

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PORTICO OF HOMEWOOD, BALTIMORE, MD.
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EDITORIAL

A Report On the Elimination of Waste

MR. HERBERT HOOVER, before entering the Cabinet of President Harding, was President of the American Engineering Council and appointed a Committee on Elimination of Waste in Industry, popularly known as "The Hoover Committee on Waste."

The report of this committee has been made public and the reaction on the reading public is interesting to observe. Prices in the construction industry showed the greatest per cent. advance of all prices during the recent emergency. Construction materials prices and wages of building mechanics show the smallest percentage drop in the deflation process now going on. What, therefore, is more natural than to attack the building industry as one of the greatest examples of waste in industry?

There was a reason for the high price for construction materials at a time when the government was in the market for practically all the output of every forest, mine, quarry and factory in the country. Ordinary work was suspended and today the commercial demand keeps stocks low even at present prices.

For wages the same reason may be advanced, the proof being that there is apparently little surplus building labor even at present wages. Low prices should properly indicate the existence of surplus goods and labor. Low prices such as the people are getting in some quarters today are due entirely to bank pressure. Commercial surveys show a great amount of unemployment and a shortage of goods, the production of which would produce a temporary shortage of labor.

The public notes approvingly the suggestion of waste in the October redecoration of apartments. In this operation, the report states, 25,000 workmen are employed for a few weeks, when, if properly conducted and spread throughout the year 5,000 men would find continuous employment. This is not the fault of the construction industry but lies in deep-seated habits of the whole people. Redecorating is a bait for tenants and is not regarded by the average landlord as part of the upkeep of buildings. The dating of all leases to terminate on October first alone creates the waste mentioned. No one doubts that the public generally would welcome more freedom to move. The fixing of one day for the termination of leases is a convenience for one class of middlemen and creates opportunities for combinations of landlords.

THE committee stated that in many places there are too many contractors. Cleveland has 4,000 and needs not more than 400. Many of the small ones, lacking technical ability fail. Careful analysis of failures published by commercial rating agencies do not ascribe a large percentage to ignorance, which in fact counts for very little, as few men go into a business they do not understand.

Why say that 400 contractors could serve Cleveland better than 4,000? Napoleon once asked a young lady how many needles of thread it required to make a shirt. She replied, "One, if it is long enough and properly handled." So, as everybody knows, one properly organized and managed contracting company could serve Cleveland, or any other city.

Freedom of competition is necessary to prevent stagnation. The presence of many contractors is not always a sign of waste. The average small contractor earns little more than day wages. He gives, as a rule, good value, and heretofore a large number of contractors in a community was regarded as a healthy sign.

The newspapers regard as quite important the fact that "Carelessness of contractors and workmen who learned bad habits in the war through the cost-plus plan cause great losses (waste)." It is the best argument against limiting the number of contractors. The revelations of waste in the shipping board and in all of the larger operations undertaken during the war proved that concentration under too few heads does not reduce waste. Waste is reduced and efficiency increased with an increase in the number of responsible men whose gain is measured by production rather than by time.

THE committee believes—that twenty-five per cent. of the waste in industry is at present unavoidable; twenty-five per cent. is due to inefficiency and ignorance of labor, and, fifty per cent. to lack of intelligent management. This report was made by men who were selected for their supposed superior fitness to discuss waste. That these men indict the men to whom they look for employment as responsible for at least fifty per cent. of the waste in industry is significant. Is it not probable that inefficient management is responsible for much of the waste at present chargeable to labor? The report will be of great value to the whole country if read as a report on all industry. The singling out of the construction industry for comment is not the way to encourage a revival of building.

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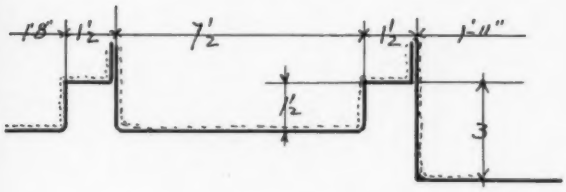
French and Italian Details

Rustication of the Ruccellai Palace, Florence, Italy.

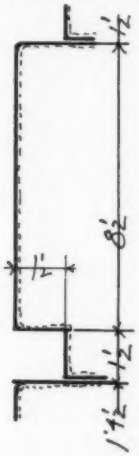
THE Ruccellai Palace was built in 1460 *by Alberti. In this building, and for the first time, classical pilasters, in superposed stages, were applied to a street façade. Unlike the Riccardi and the Strozzi the rustication is not varied in the façade, being in this respect similar to the Sal-Concellacia in Rome, which was built in* 1495 *and attributed to Bramante. The angle of the rustication is about a right angle and the depth* 1½ *inches.*

Rustication of the Strozzi Palace, Florence, Italy.

THE Strozzi Palace, built in 1490 *by Bramante, is in type similar to the Riccardi Palace, built in* 1430. *It stands with the Riccardi Palace as the best example of the Florentine type of Italian Palace. The drawing is of the rustication of the lowest course. In the central rustication the projection is about* 3 *to* 3½ *inches, while in the top, instead of being plain stone jointing as in the Riccardi, there is a slight projection of not over one inch.*



3" SECTION · THROUGH · PILASTER.



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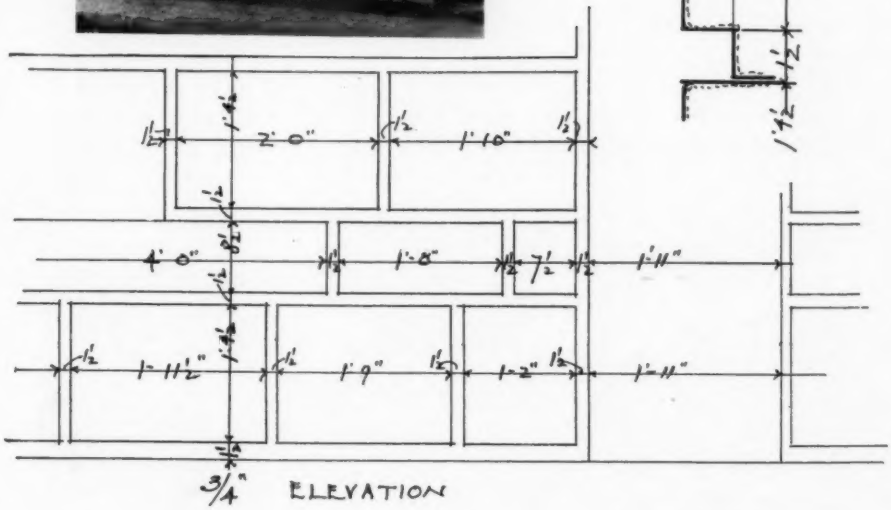

ELEVATION

MEASURED AND DRAWN BY ROBERT M. BLACKALL,
35th HOLDER OF ROTCH TRAVELING SCHOLARSHIP

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FIRENZE 3/8, RMB

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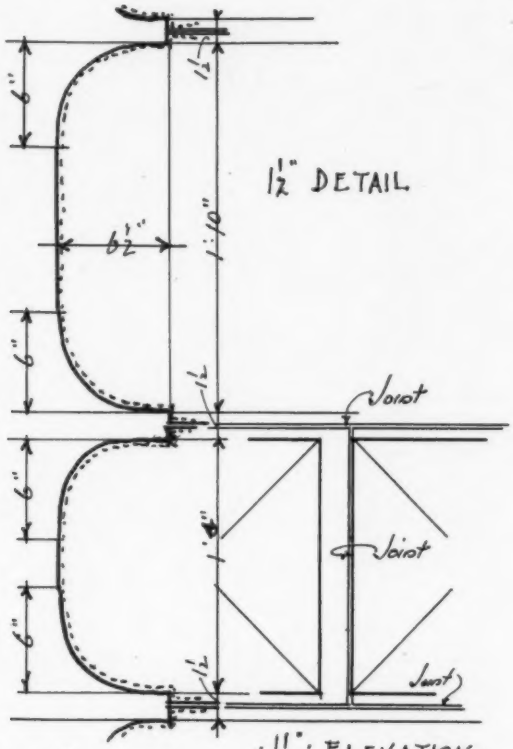

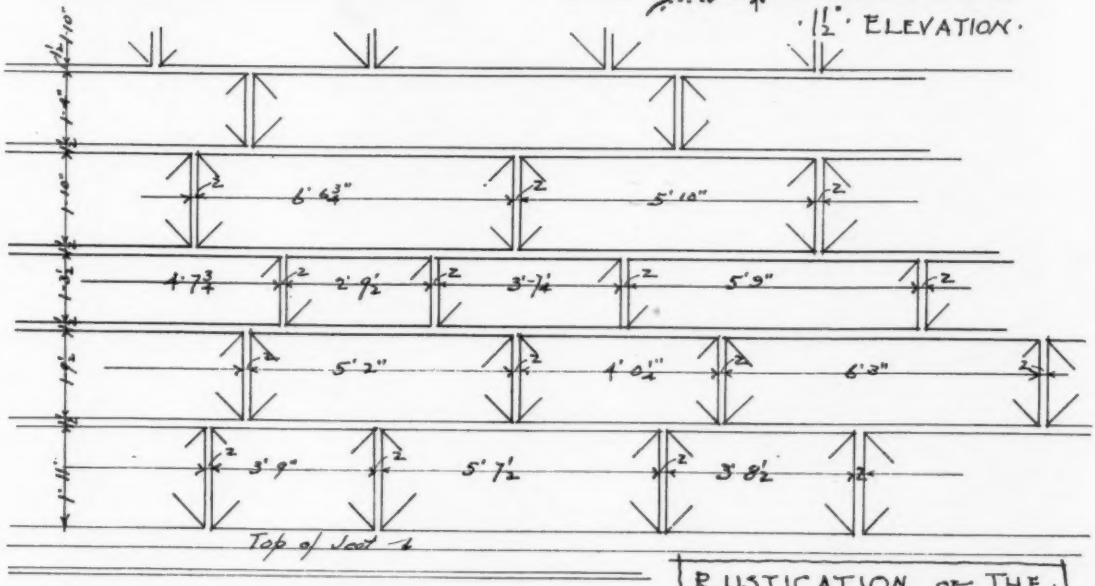

RUSTICATION OF THE STROZZI PALACE. FIRENZE ITALY. 9/21 RMB

MEASURED AND DRAWN BY ROBERT M. BLACKALL,
35th HOLDER OF ROTCH TRAVELING SCHOLARSHIP

THE AMERICAN ARCHITECT, SERIES II
FRENCH AND ITALIAN DETAILS

XUM

LAWN FRONT

HOUSE OF H. BELLAS HESS, ESQ., HUNTINGTON, L. I., N. Y.

HOWELLS & STOKES, *ARCHITECTS*

XUM

TERRACE FRONT

HOUSE OF H. BELLAS HESS, ESQ., HUNTINGTON, L. I., N. Y.

HOWELLS & STOKES, *ARCHITECTS*

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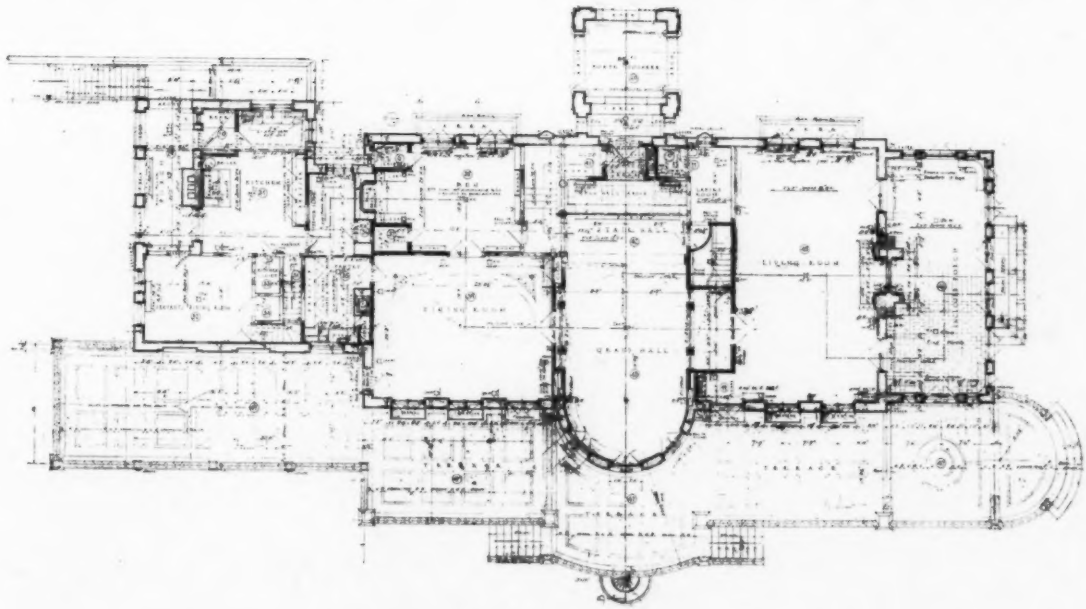
DETAIL, TERRACE FRONT

HOUSE OF H. BELLAS HESS, ESQ., HUNTINGTON, L. I., N. Y.

HOWELLS & STOKES, *ARCHITECTS*

LIVING ROOM



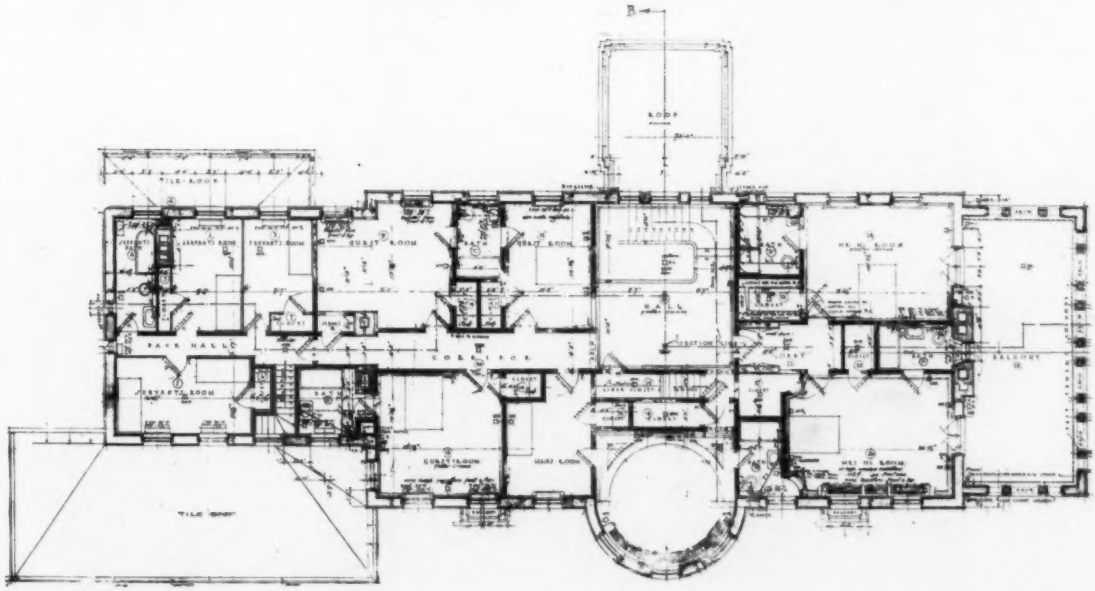
FIRST FLOOR PLAN

HOUSE OF H. BELLAS HESS, ESQ., HUNTINGTON, L. I., N. Y.

HOWELLS & STOKES, *ARCHITECTS*

XUM

DINING ROOM



SECOND FLOOR PLAN

HOUSE OF H. BELLAS HESS, ESQ., HUNTINGTON, L. I., N. Y.

HOWELLS & STOKES, *ARCHITECTS*

MAIN HALL

STAIR HALL

HOUSE OF H. BELLAS HESS, ESQ., HUNTINGTON, L. I., N. Y.

HOWELLS & STOKES, *ARCHITECTS*

XUM

THE TERRACE

ENCLOSED PORCH

HOUSE OF H. BELLAS HESS, ESQ., HUNTINGTON, L. I., N. Y.
HOWELLS & STOKES, *ARCHITECTS*

GARDEN WALL

VIEW ON TERRACE

HOUSE OF H. BELLAS HESS, ESQ., HUNTINGTON, L. I., N. Y.

HOWELLS & STOKES, *ARCHITECTS*

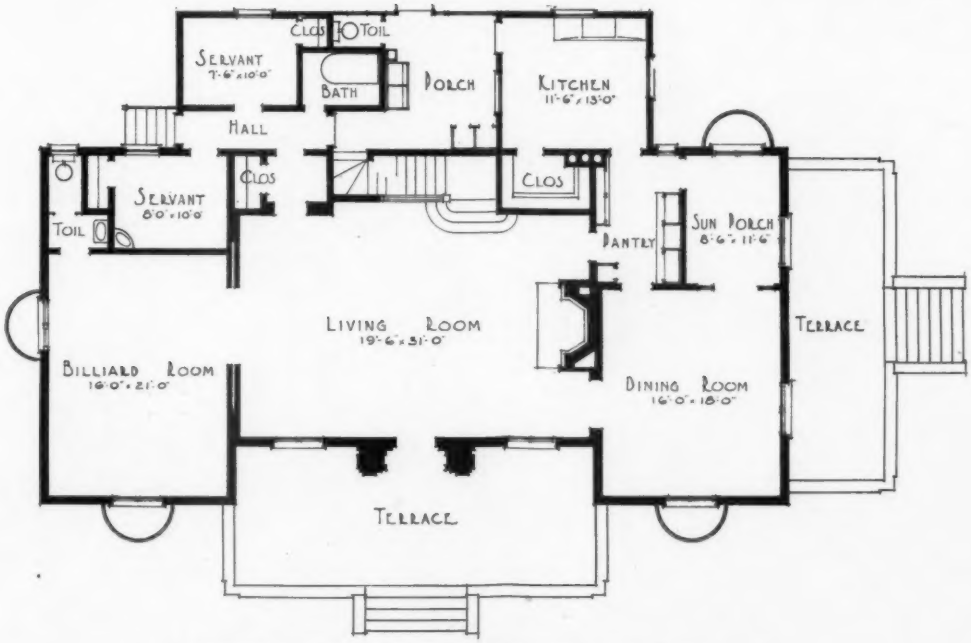
HOUSE OF MRS. LOUIS GASSNER, HILLSBORO, CAL.
SYLVAIN SCHNAITTACHER, *ARCHITECT*

VIEW FROM THE NORTH

HOUSE OF MRS. LOUIS GASSNER, HILLSBORO, CAL.

SYLVAIN SCHNAITTACHER, *ARCHITECT*

LIVING ROOM



HOUSE OF MRS. LOUIS GASSNER, HILLSBORO, CAL.

SYLVAIN SCHNAITTACHER, *ARCHITECT*

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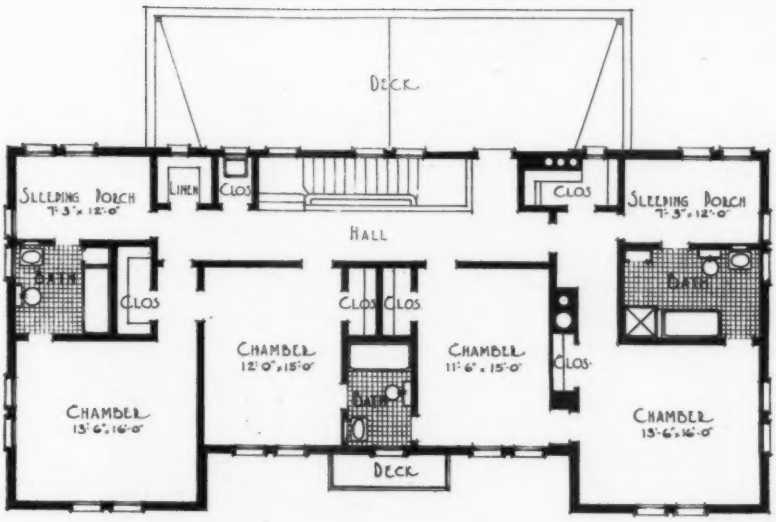
DINING ROOM



- SECOND - FLOOR - PLAN -

HOUSE OF
MRS. LOUIS GASSNER,
HILLSBORO, CAL.

SYLVAIN SCHNAITTACHER
ARCHITECT

HOUSE OF DR. OTTO J. STEIN, CHICAGO, ILL.

HOLABIRD & ROCHE *ARCHITECTS*

LIBRARY
THE DETROIT EDISON CO.
AUG 11 1921

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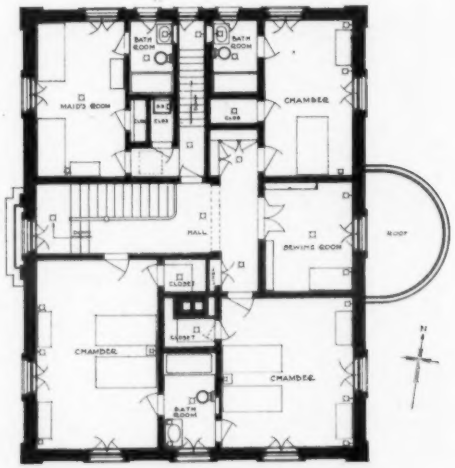
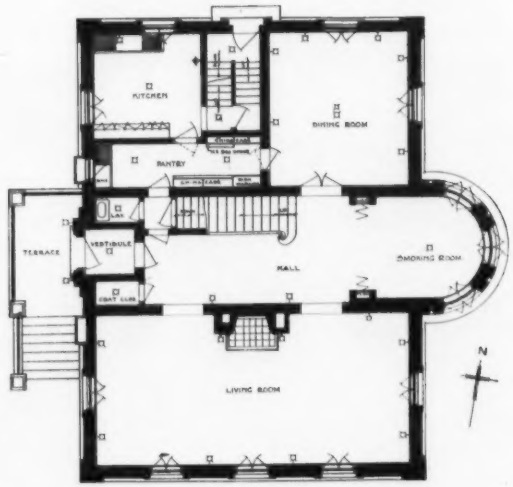
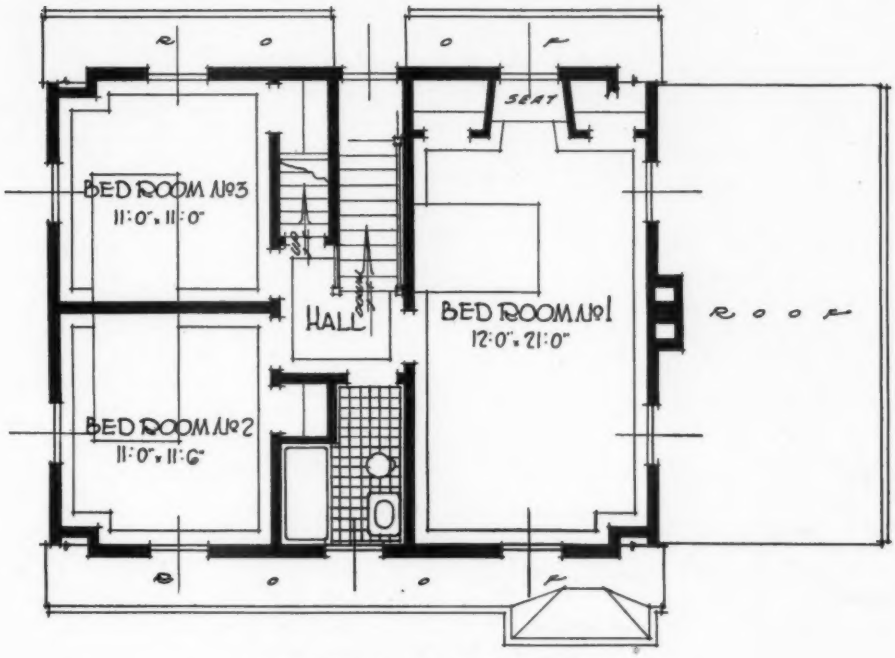




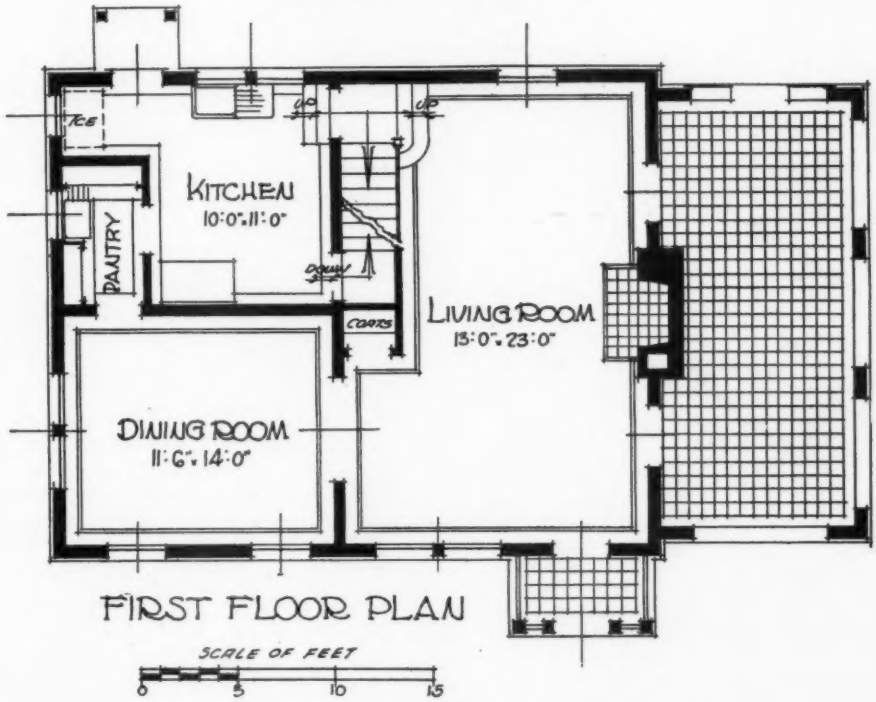
HOUSE OF DR. OTTO J. STEIN, CHICAGO, ILL.

HOLABIRD & ROCHE, *ARCHITECTS*

HOUSE OF F. HOLDERMAN, ESQ., TENAFLY, N. J.
R. C. HUNTER & BRO., *ARCHITECTS*



SECOND FLOOR PLAN



FIRST FLOOR PLAN

HOUSE OF F. HOLDERMAN, ESQ., TENAFLY, N. J.

R. C. HUNTER & BRO., *ARCHITECTS*

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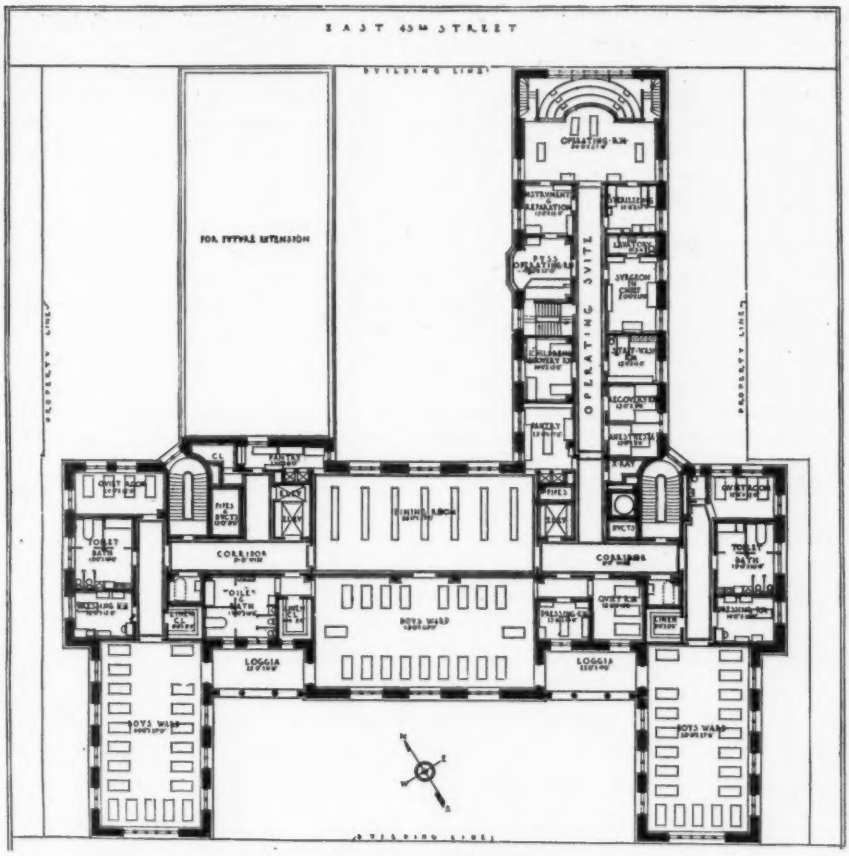
Planning the Hospital

(*Continued from page 72*)

it is suggested that certain types of equipment be made of Monel metal. This metal, on account of its resistance to antiseptic solutions, food acids, strength and permanence of finish, seems to be ideal for this purpose.

I have elsewhere referred to the planning of the hospital with a long view to the future and to environment. The hospital's neighbors are entitled to consideration also. Whenever possible the hospital should be placed at a considerable distance from residences, that the occupants thereof may not be annoyed by the odors, noises and sometimes unsightly features attendant upon hospital work.



FOURTH FLOOR PLAN

HOSPITAL FOR THE RELIEF OF THE RUPTURED AND CRIPPLED, NEW YORK

YORK & SAWYER, *ARCHITECTS*

Generally accepted as splendidly serving its purpose, economical in operation, and provided with ample opportunities for future expansion, the Hospital for the Ruptured and Crippled of New York City presents a rare opportunity for the study of hospital planning and arrangement of departments.

It was the writer's purpose, in working with the architects, to lay special stress upon the avoidance of unnecessary or duplicated effort upon the part of the staff and employees, with the result that the routing through the individual departments, and the inter-departmental routing has been conducive to freedom from confusion and to the economical operation of the hospital.

Special attention was laid to the reduction of space used for corridors and the elimination thereof insofar as possible.

The principles applied to this building can equally well be applied to a hospital of a general nature and to the hospital consisting of a number of buildings.

In considering the plans of this hospital the writer gave special thought to present efficiency and to economical operation, but future expansion was carefully considered also. Especially was thought given to the avoidance of unnecessary footsteps on the part of the nurses. The Treatment and Linen Rooms are at the entrance to the Ward, next the toilet, and bath room and then the Quiet Room. Had this been a different type of an institution the Utility Room might have been placed adjacent to the entrance to the Ward with a saving of steps and energy as was done in the case of the Adult Ward on the third floor.

Each department and unit in this hospital is complete unto itself and can be operated without going through other departments or units, while each unit can be closed off when necessary by means of fireproof doors. Thus an outbreak of fire or contagion in one department does not prevent the usual operation of the institution otherwise, nor does it necessitate a roundabout travel to the various departments. It has been demonstrated that the working forces from the greatest distance can reach the location of a fire in less than one minute from the time of the ringing of the alarm.

The bed capacity of this hospital is 242. The

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daily average number of patients in 1919 was 185 and the daiiy cost per patient was $2.70, which is very low considering the existing high costs and especially the excellent results obtained by this great hospital. These results were made possible by careful thought of convenience and economy of routing, operation and supervision during the period of preparation of plans.

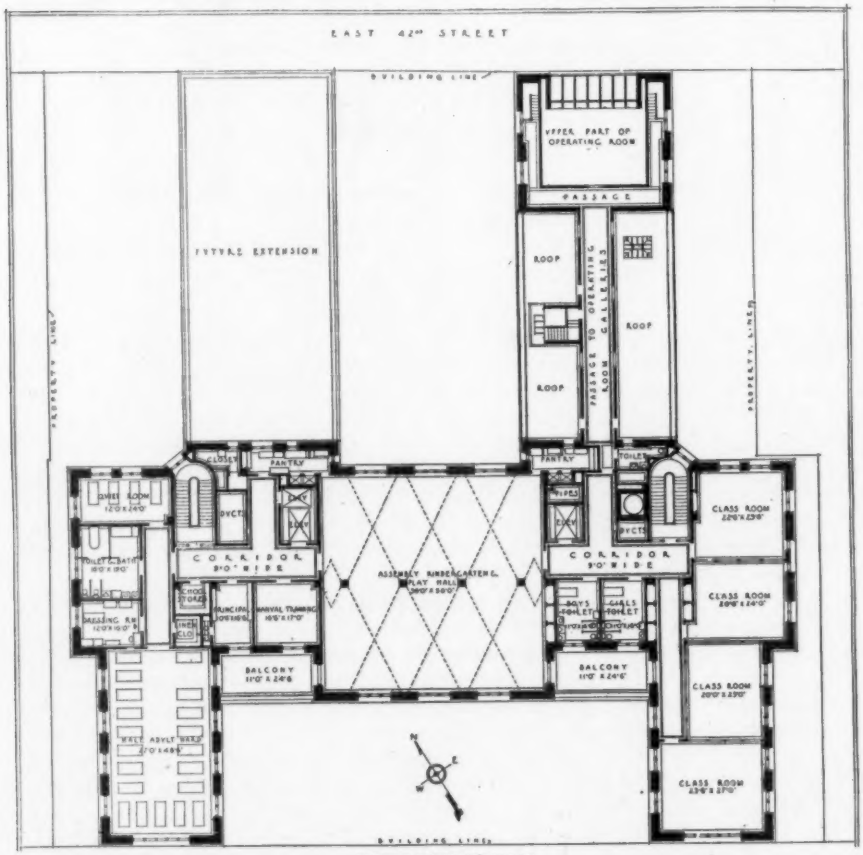
IT frequently happens that plans of new or prospective hospital buildings are brought to the architect by persons interested in a particular field of hospital work. The building constructed on this basis will inevitably be found upon operation to be defective in many respects. It is therefore a pleasure to be able to direct attention to a hospital well planned, convenient and economical in operation and one which is conceded to be one of the best hospitals in the country.

The same principles applied to a smaller hospital are typified in the Mary McClellan Hospital (75 beds) at Cambridge, N. Y. The State Board of Charities of New York points to this building as the model hospital of moderate size within the State of New York.

There recently came to my notice an attractive sheet of prints sketching huge buildings under construction, waterfront developments and busy shipyards. Printed on this, in big letters, were slogans such as "Plan Buildings Now," "The Early Planner Catches the Building Market," "Your Architect Should Plan Now." Even though this be propaganda in the interest of the building fraternity it carries a suggestion to those who sooner or later expect to build hospital buildings.

No type of building should be planned with more searching and careful consideration than the hospital. Its efficiency in serving, its economy in first cost and in maintenance, in fact, its entire value as an instrument of service to the public are determined in the plan and in the study given to the solution of the particular problem involved. Failure in hospital planning has, in too many instances, been the result of a hurried consideration of these problems owing to the pressure applied to the architect and to the building committee, and of their joint desire to get the plans finished and the building started in the shortest possible time. A problem of such great complexity as the modern hospital should be the subject of study for months by those engaged in the making and perfection of the plans. It should be a study given with a free mind, with concentration of attention, and with time available for the study of the successful features of hospitals previously built.

Visits should be made to similar hospitals where the latest and best-studied ideas have been carried out, consultations without number should be held among those interested in the production of the plans, sketches should be made and remade, each room, each part and each detail



FIFTH FLOOR PLAN

HOSPITAL FOR THE RELIEF OF THE RUPTURED AND CRIPPLED, NEW YORK

YORK & SAWYER, *ARCHITECTS*

should be considered from every conceivable viewpoint, and each should be evolved with economy of space, economy of material and with a thorough fitness for present and future requirements.

Efficient planning and building can be accomplished only through systematic organization involving much time. (See "Building the Hospital—Organization and Methods.")

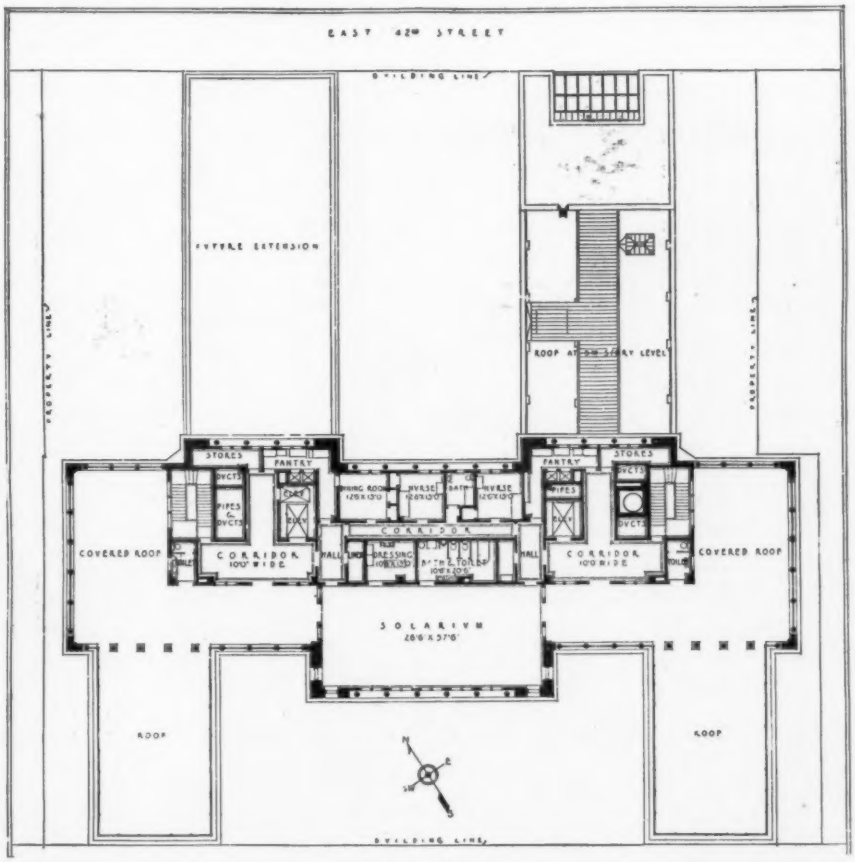
In the case of many hospitals the plans are perfected only after the building is under construction, very much to the detriment of the adequacy and economy of the entire plant. Perfect the plans, then build. Study the thousand and one problems while improvement means only the erasure of a few lines rather than when it involves the pulling down of steel and masonry.

The building of new hospital structures has been long suspended. The demand for hospital accommodation increases. Meanwhile the demand for new school buildings, homes, apartment houses, office buildings and every other class of building increases. Congestion in building construction is easily foreseen. Fortunate will be those who have given months to the study of plans. Reductions in the present cost of building materials and labor will be slight. Such reductions in costs will occur and pass in less time than that required for the preparation of plans and specifications for a building of any considerable size. The sag in the building trades has brought about, through competition, a reduction in the prices asked for building construction that will disappear upon the resumption of building.

The architect's experience in the planning and construction of hospitals during the period of high costs has made necessary the greatest study in the selection of building materials that the maximum of results should be obtained at the minimum of cost. The engineer finds equally important the selection of materials used in the mechanical equipment of hospitals.

The construction of new buildings and the reconstruction of old buildings will soon assume large proportions and will require the services of many architects, engineers and builders.

It would, therefore, seem that every indication points to the wisdom of planning now.



SIXTH FLOOR PLAN

HOSPITAL FOR THE RELIEF OF THE RUPTURED AND CRIPPLED, NEW YORK

YORK & SAWYER, *ARCHITECTS*

XUM

BEAUX-ARTS INSTITUTE OF DESIGN

DIRECTOR OF THE INSTITUTE, LLOYD WARREN

ARCHITECTURE, RAYMOND M. HOOD — SCULPTURE, JOHN GREGORY

INTERIOR DECORATION, ERNEST F. TYLER — MURAL PAINTING, ERNEST C. PEIXOTTO

Official Notification of Awards—Judgment of March 15th, 1921

PROGRAM

CLASS "B"—III ANALYTIQUE

The Committee on Architecture proposes as subject of this Competition:

"A SEMI-CIRCULAR PORTICO"

A palatial residence is to be built facing a large garden. The principal motif of the façade of the building is to be a semi-circular portico similar, in general conception, to the portico of the White House at Washington.

The residence itself consists of two stories above the basement, the main floor of the house being 4′-0″ above the garden level. The floor of the portico is approximately at the same level as the main floor of the house and is provided with steps or a stairway leading to the garden. The stairway or steps may extend beyond the limiting dimensions given below for the portico. The portico is roofed. The residence and portico are to be built of stone or marble.

In the design of the portico the class orders shall be used; this, however, does not exclude the use of arched openings, or any other forms, provided that the orders be used in conjunction therewith.

The width of the portico measured along the façade of the house is not to exceed 40′-0″.

Jury of Award—W. F. Lamb, H. O. Milliken, F. A. Godley, C. A. Licht, T. S. Holden, A. E. Flanagan and A. L. Guptill.

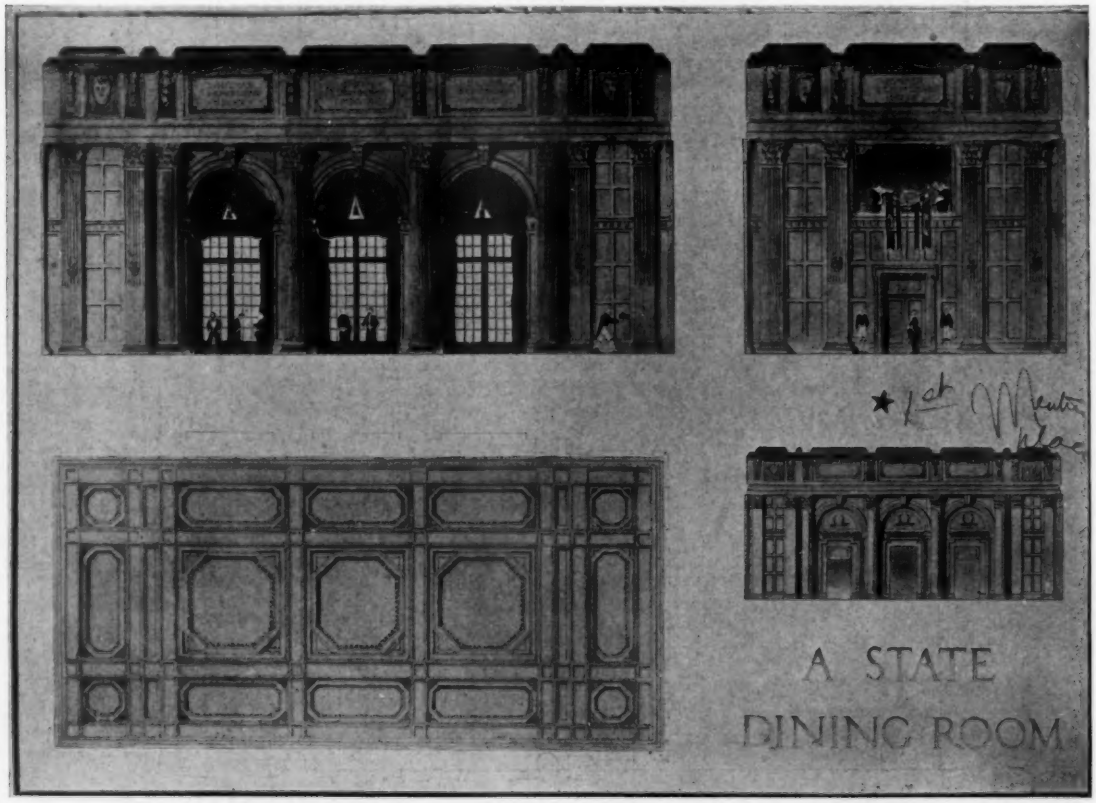
Number of Drawings Submitted—174.

AWARDS:

FIRST MENTION PLACED—J. J. Keil and C. Snyder, Carnegie Inst. of Tech., Pitts.

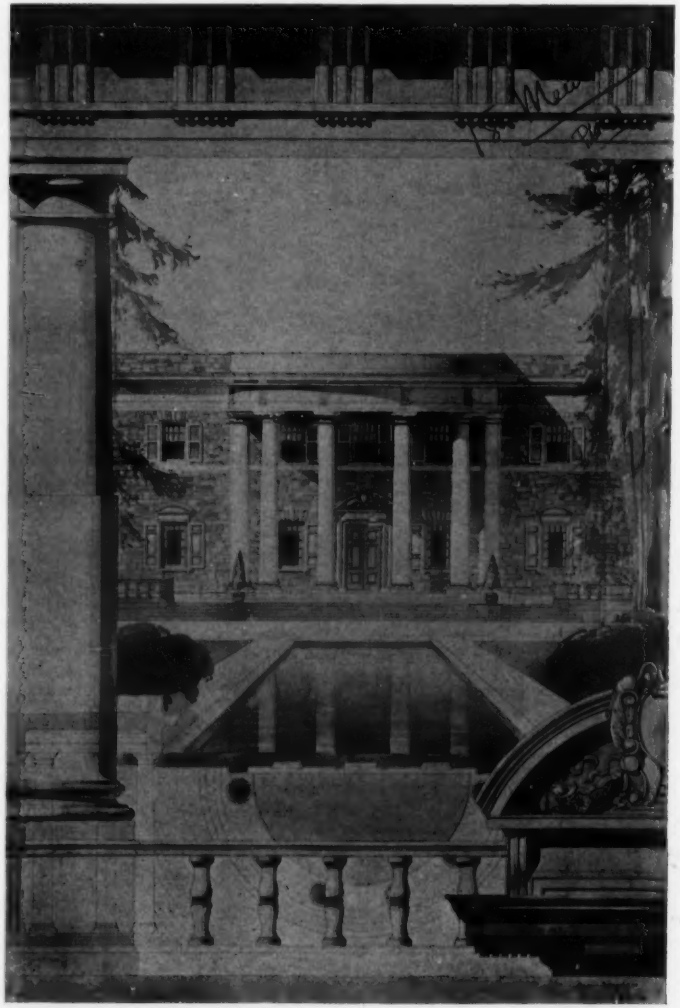
FIRST MENTION—M. G. Uslan and C. J. Billmeyer, Carnegie Inst. of Tech., Pitts.; J. M. Paul, Columbia Univ., N. Y. C.; V. Pribil, Atelier Corbett-Gugler, N. Y. C.; W. H. Speer, Atelier Denver, Denver; J. Garry, 644 Eighth Ave., N. Y. C.; T. Ross, Atelier Parsons-Chicago Archtl. Club, Chicago.

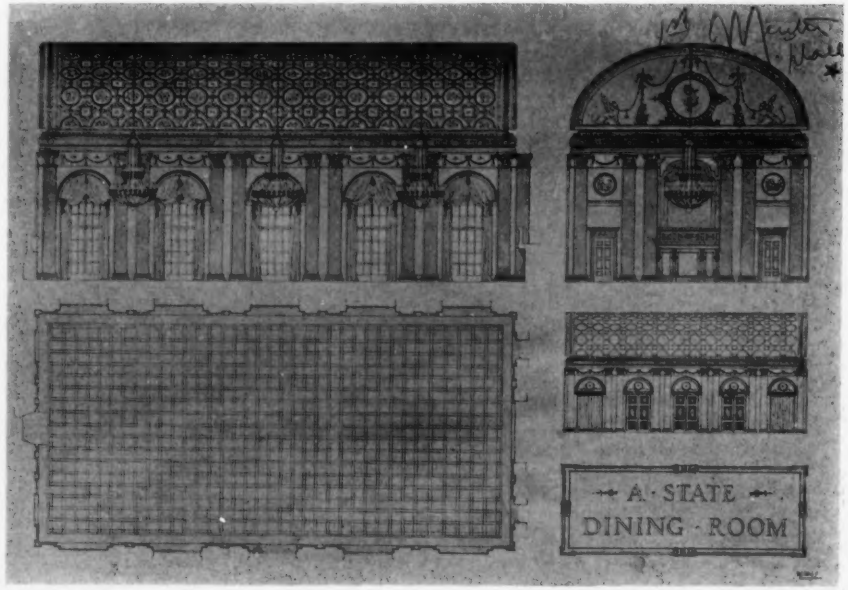
Mention—J. S. Crytzer, E. F. Allodi, E. F. Kennedy and E. Weston, Boston, Archtl. Club, Boston; F. W. Clarke and G. M. Dennis, Atelier Birmingham, Birmingham; J. Delo, H. H. Lefkowitz, G. A. Brink, C. C. Agee, V. J. Schoeneman, G. A. Fister, W. C. Pyle, A. S. Vincent, H. S. Torbert, L. C. Page, P. F. McLean, W. H. Willis, W. Z. Bane, L. B. Blair, H. L. Carter and Louise Barton,



FIRST MENTION PLACED — W. PRATT — COLUMBIA UNIVERSITY

CLASS B, III PROJET—A STATE DINING ROOM

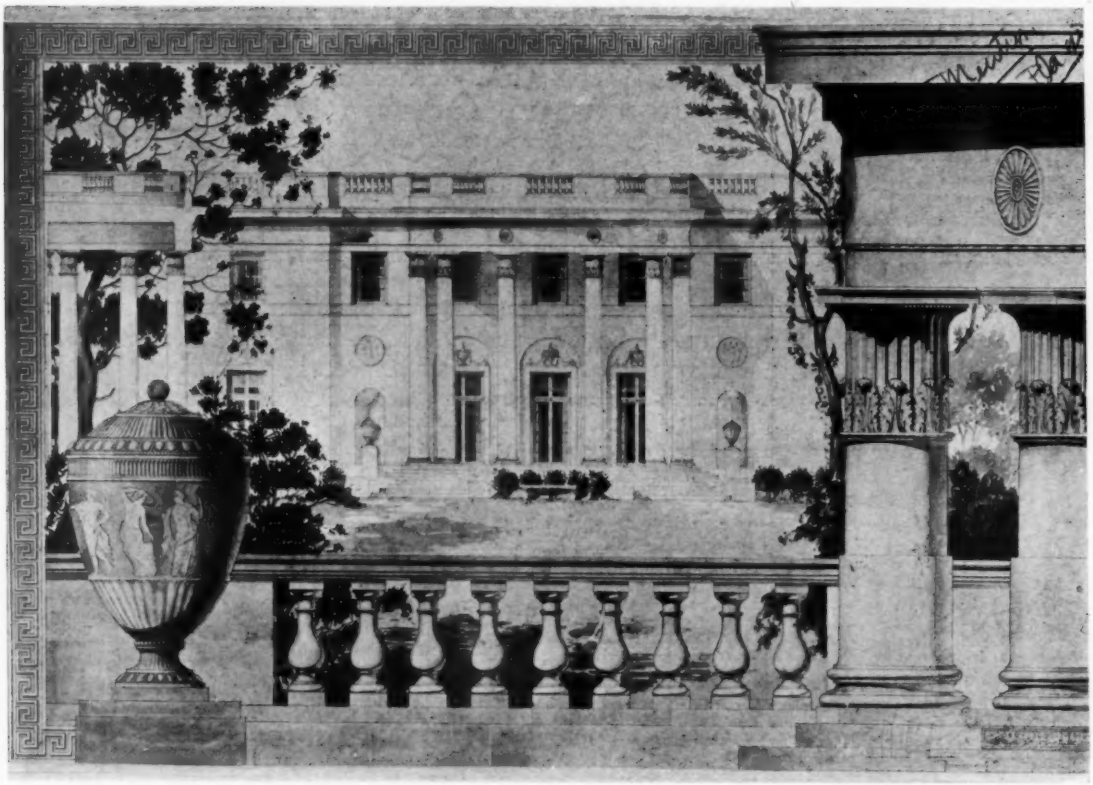




ABOVE: P. HOHORST, FIRST MENTION PLACED
CLASS B, III PROJET—A STATE DINING ROOM

AT LEFT: C. SNYDER, FIRST MENTION PLACED
CARNEGIE INSTITUTE OF TECHNOLOGY, PITTSBURGH

STUDENT WORK, BEAUX-ARTS INSTITUTE OF DESIGN



FIRST MENTION PLACED J. J. KEIL CARNEGIE INSTITUTE OF TECHNOLOGY, PITTSBURGH.

CLASS B, III ANALYTIQUE—A SEMI-CIRCULAR PORTICO

Carnegie Inst. of Tech., Pitts.; A. O. Angilly and A. A. Ehrenrich, Columbia Univ., N. Y. C.; C. Jensen, P. Sanfilippo, Jr., and S. G. Wiener, Atelier Corbett-Gugler, N. Y. C.; R. C. Danis, Catholic Univ., Wash., D. C.; C. F. Bieler, Atelier Denver, Denver; J. Grellinger, Atelier DeGellekc, Milwaukee; L. G. Clarke, A. F. Euston, A. Schablik, O. L. Warady and J. W. Hanson, Atelier Hirons, N. Y. C.; J. H. Jones, J. H. Lapish and C. L. Nutt, George Washington Univ., Wash., D. C.; F. Sakata, E. F. Horley, W. A. Jaeger and D. Nisnosky, John Huntington Poly. Inst., Cleveland; E. A. Gylleck, I. L. Johnson, L. E. Allen, A. R. Brown, D. R. Lundberg and J. G. Rehder, Atelier Parsons-Chicago Archtl. Club, Chicago; A. Zava, M. Barishenkoff, D. Raymond, J. F. Brandt, L. S. Young, Edna E. Voigt and H. O. Williams, Pratt Institute, Brooklyn, N. Y.; L. C. Palmer, F. M. Garey, F. W. Niblet and A. R. Scott, Richmond Archtl. Club, Richmond; H. S. Shaw, A. Bowen, W. H. Lewis, W. M. Haslett, L. Hauf, Jr., and C. A. Langzettel, "T" Square Club, Philadelphia; V. D. Phenix, T. B. Mayhall, E. F. Webster, V. Sauvignet and R. Ainsworth, Univ. of Texas, Austin; A. D. Baker, Univ. of Southern California, Los Angeles; E. Green, Jr., Swain Free Sch. of Design, New Bedford; Eva McCanles, O. F. Nicholson, A. E. Middlekauff, R. A. Herthel and A. B. Harris, Univ. of Kansas, Lawrence; V. N. Jones, Rachel Carter, D. T. Lopp, H. Richardson, V. Edades, Jenness Bonnell, A. E. Fulton, Verle L. Annis and W. Lund, Univ. of Washington, Seattle; A. Harrer and A. L. Brauer, Atelier Wynkoop, N. Y. C.

PROGRAM

CLASS "B"—III PROJET

The Committee proposes as subject of this Competition:

"A STATE DINING ROOM"

This room is to be built in the Executive Mansion of the Governor of one of our large states to serve for official dinners. The decorations should be in keeping with the dignity and magnificence of the functions for which it is destined. A musicians' gallery is indispensable. The dimensions of the room are 40'-0" x 80'-0" with a ceiling height of 40'-0", forming a so-called "double cube," of which there are certain well-known examples. The room is lighted by windows on one of the long sides and the entrance or entrances are on the opposite side.

FIRST MENTION PLACED—P. Hohorst and A. W. Chesterman, Carnegie Inst. of Tech., Pitts.; W. Platt, E. Kaeyer and S. Rockawer, Columbia Univ., N. Y. C.; M. L. Anderson, Univ. of Minnesota, Minneapolis; A. G. Clay, Yale Univ., New Haven.

FIRST MENTION—E. W. Klee and C. F. Bowers, Carnegie Inst. of Tech., Pitts.; W. Conley and J. Aronson, Columbia Univ., N. Y. C.; R. Mira, Catholic Univ., Wash., D. C.; K. Sasagawa, Atelier Hirons, N. Y. C.; Kathryn Harris, George Washington Univ., Wash., D. C.; A. D. Wills, Univ. of Minnesota, Minneapolis; B. S. Georges, Yale Univ., New Haven; L. B. Wamnes, Atelier Wynkoop, N. Y. C.

MENTION—J. E. Linnet, Boston Archtl. Club, Boston; H. A. Page, C. E. Landefeld, J. Franklin, P. C. Reed, F. H. Floyd, L. B. Christman, M. C. Bert, W. M. Burke, L. E Considine, W. L. Gill., Jr., J. W. Minick, J. W. Fritz, A. A. Lewis, W. T. Spann, F. B. Smith, K. E Weber, J. C. Topnick, E. O. Anderson, A. Taormina, R. Patterson, H. Stone, V. H. Stromquist, M. D. Smith, R. A. McKee, G. O. Schoonover, H. Dowden and L. Nusbaum, Carnegie Inst. of Tech., Pitts.; S. Dresser, A. T. Saxe, M. C. Hills, A. Marshall, S. R. Moore, N. B. Mead, Jr., and A. M. Taylor, Columbia Univ., N. Y. C.; J. J. Carey, P. Dowling and E. R. French, Catholic Univ., Washington, D. C.; C. F. Freidhof, Cincinnati Archtl. Soc., Cincinnati; C. H. Kellogg, Atelier Denver, Denver; F. J. Brince, S. M.

Palm and H. Van Der Lyn, Atelier Hirons, N. Y. C.; A. P. Starr, George Washington Univ., Wash., D. C.; E. C. Rising, H. P. Whitworth and L. A. Balicki, John Huntington Poly. Inst., Cleveland; J. N. Maddocks, Penna. State College, State College; W. K. Macomber and R. N. Hazlewood, Post and Lintel Club, Minneapolis; F. K. Cheetham, R. E. Dando and L. E. McConville, Atelier Parsons-Chicago Archtl. Club, Chicago; J. J. Welsh, Swain Free Sch. of Design, New Bedford; B. M. Dawson, Martha V. Dittmar and C. H. Siebert, Syracuse University, Syracuse; A. H. Miller, Thumb Tack Club, Detroit; E. A. Beihl, W. R. Fish and H. A. Allen, "T" Square Club, Philadelphia; E. Larson, H. N. Haines, A. R. Melander, D. J. Deneen, Alice Little, G. A. Stewart, D. Campbell, O. Thorshov and R. Damberg, Univ. of Minnesota, Minneapolis; M. W. Gill, Elizabeth Ayer and W. S. Chinn, Univ. of Washington, Seattle; R. L. White, R. L. Jenkins and Essie Lipscomb, Univ. of Texas, Austin; C. W. Wenger and H. J. Lawrence, Univ. of Virginia, Charlottesville; R. E. Tatum, A. E. Evans and R. R. Hibbs, Univ. of Kansas, Lawrence; V. M. Raynal, H. S. Kelly, W. Douglas, D. M. Campbell, D. Weinstein, C. B. Lewis and P. E. Isbell, Yale Univ., New Haven.

H. C.—T. F. McDonough, Boston Archtl. Club; K. Matsunoi, P. Simons and I. Tron, Columbia Univ.; E. L. Babitsky, John Huntington Poly. Inst., Cleveland.

DEPARTMENT of SPECIFICATIONS

The Construction of a Specification

AS specifications may be divided into two classes —with respect to the completeness of detail embraced therein—the first essential step in the preparation of specifications is to determine into which of these two classes they will be placed. These classes are (a) specifications to accompany drawings completely detailed, leaving very few matters for later final determination except perhaps the full size details, and (b) specifications to accompany drawings not completely detailed and leaving many matters of major and minor importance for later determination.

The drawings will govern the classification, of course, but it should be understood that at the inception of the work in the drafting room a decision must be made as to whether the drawings will or will not be made as complete and as thoroughly indicative of the desired result as is possible. A careful specification writer, one who appreciates the numerous difficulties that are sure to present themselves on the job, will expect and should insist, to the uttermost, on having the drawings prepared as completely as possible, having in mind the nature of the work that is to be accomplished and the kind of contractor who probably will be called upon to do the work. If he is in charge of the preparation of drawings he will solve this problem as his good judgment dictates, while if the drawings are prepared without his jurisdiction, he will be required to make the decision as to completeness of drawings based entirely on his scheme for the developing of specifications that will assure the desired co-operation with the drawings. It is customary for many specifications to contain the following clause: "The contract documents are complementary and what is called for by one shall be as binding as if called for by all." This does not mean that one sheet of the drawings may be permitted to show one certain material or method at a given place while another sheet may show materials or methods totally different, thus giving the architect an opportunity to make a selection at a later date, probably after construction work has started. It is only an expression of human nature for a contractor to protest against such drawings unless the choice is left to him (a choice usually dictated by financial considerations) and the specifications must be so written, in respect to their "all-inclusiveness" as to obviate such contretemps. Such matters will, however, be discussed in greater detail later in considering the checking of the drawings.

If, during the progress of the drawings notes have been made for future reference in the preparation of the specifications, it will be found convenient to classify them strictly according to the section of work to which they refer, with additional notes elsewhere to recall the text of the note or to bring up some point that must be given attention at a certain time or periodically when writing the specifications for some section in which reference thereto must be made. Written notes should be made in as great number as necessary as the habit of depending on mental notes is, at best, not without faults inherent in mental processes of memory and it is most certainly fraught with potential danger.

The schedule of materials, as described in a previous article should be brought to completion in so far as possible, when the preparation of specifications is to be commenced as it constitutes one of the essential preliminaries. At this stage of the work it must be assumed that all major decisions with respect to materials have been made and that the correlative questions have been considered and their answers determined. Therefore there should be no reason why this schedule cannot be completed and made ready for reference as the controlling determination of the matters embraced therein. The convenience, to the specification writer and to all those concerned in the production of the drawings, cannot be over-

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estimated and a carefully and thoroughly prepared document will be of the greatest assistance in the elimination of errors and misinformation.

AS the drawings approach completion the preparation of the specifications must be started in earnest. The one, almost universal, method of completing the drawings and specifications by creating a competitive basis for the drafting room and specification department, in order to see which gets its documents completed first, is to be condemned as a vicious practice. Of course, it is natural that these documents be completed with speed, but the amount of pressure brought to bear must be compensated by a desire to have accuracy and thoroughness given as great consideration as rapidity of completion. The best practice in preparing specifications will so time their completion that the drawings will have been ready for publication (or issuance to contractors) several days before their completion. This interim of a few days will permit a final checking of the drawings by the specification writer and, on his part, will tend to eliminate recourse to the excuse that the drawings were changed subsequent to the completion of the specifications, if, after construction work has started, it is discovered that errors have been made that easily could have been avoided if greater care had been exercised. The completion of the specifications must not be hurried the last few days at the sacrifice of accuracy and thoroughness. Ordinarily it is possible for one who has written specifications previously to determine with sufficient accuracy the date when his work can be accomplished and the document then should be started with this date in view. Sufficient time must be devoted to each part of the specifications to insure coherence and accuracy and it is better to advance the date of commencement rather than the date of completion.

When the drawings have been studied sufficiently for the specification writer to gain a clear understanding of them he should start the preparation of an outline for the specifications. This outline should be started with a view to making it fairly complete at this state, leaving room for the insertion of additional items that will present themselves as its preparation progresses. The outline should be carried through from the first to the last sections of the specifications in order that matters in one section that are interdependent with matters in some other section may be noted and, where necessary, given a preliminary study, subject to later, and perhaps more accurate, determination when the scope of the work has been thoroughly covered.

IT will be found that the evolution of the outline from its rough to its finished state will be accomplished with ease if the work be entered upon from a broad viewpoint of the completed document and a thoroughly understood set of drawings, giving attention, first, to the items of major importance and gradually working down through them to the subdivisions and minor parts and, second, to the interrelation between the sections. No attempt should be made to complete one section of the outline before other related or associated sections have been blocked out in a fairly complete state, as it must be borne in mind that coherence can be gained only through a knowledge of what the specifications will be composed. The only possible deviation from this rule can be the preparation of specifications for a building so nearly a duplicate of one that previously has been built under specifications prepared by the one who is to prepare the new document. In this case the variations probably will be of such a nature that they will be understood and noted without possible error or omission of essential details. The work of duplication will, of course, be guided by the specification previously written, which of itself, will constitute the outline.

However, it is a very good rule always to prepare an outline of the specification regardless of the nature of the work, even though it be a repetition of one previously prepared.

It is well at this time to make a suggestion as to the division of the completed specification in sections or sub-divisions in which will be placed all work of a particular trade or of trades closely associated with the dominant branch except as there may be sufficient work in two closely related trades to warrant a sub-division of the work for particular reasons.

As an example, in many buildings the dominant trade involved will be masonry, including the major branches of concrete masonry, brick masonry, terra cotta or hollow tile masonry, architectural terra cotta masonry, architectural stone masonry, natural stone masonry (such as granite, limestone, marble) and perhaps plastering. It is, of course, unusual for each of these trades to be assigned to a separate section of the specifications, it being common custom to group certain trades wherever local custom makes possible an arrangement whereby all of a number may be placed in the hands of one contractor.

However, each building must be considered by itself for the reason that one structure may be of such a type of construction that it appears desirable to make two main sub-divisions of concrete masonry and brick masonry. In this case the concrete masonry section will include all plain and reinforced concrete work of whatever kind, with a specific exclusion of all other masonry required for the building except concrete masonry. As a corollary it may be deemed expedient to include in the concrete masonry section the furnishing as well as installation of all reinforcing steel or else it may be more desirable to have the furnishing of reinforcing steel made the subject of a separate section with its receipt at the job and placing included in the concrete mason work. The

structural steel also may be handled by either of these two methods, except that where the tonnage warrants, it may be best to have the erection of the steel structural work performed either by the contractor furnishing it or by an erection contractor who is equipped especially for an expeditious handling of the work. The exigencies of the particular case will govern the arrangement of these items in the best possible manner.

FOR the second sub-division, that is, brick masonry, it may be good judgment to include in this section, in addition to all brick masonry, the furnishing and installation of granite, limestone, exterior marble work, terra cotta or hollow tile masonry and such other branches that may have been excluded from the concrete masonry section. Perhaps it may be considered proper to have the various kinds of stone made the subject of separate sections so far as the furnishing of the building is concerned, there to be delivered into the care of the brick mason contractor for handling and setting in place. Likewise, for whatever terra cotta or hollow tile work there may be involved in the operation the quantity may be considered sufficient to warrant a separate section for its furnishing and installation, especially where a steel framed structure is to have floor and roof arches and many linear feet of partitions. On the other hand, this work may be so small in scope as to subject it to greater ease of accomplishment if placed in the work of the brick masonry contractor.

Somewhat similar arrangements must be made for other sections of the work except, of course, for such items as interior plastering, glass and glazing, painting (in which ordinary decoration of office area walls and ceilings may or may not be included) and such other branches of the construction industry to which a separate section is easily assignable.

Without having in mind any particular building except that it may be considered almost universal in application the following sections may be determined upon as being a proper sub-division of the work:

Concrete Masonry
Including excavations
Brick Masonry
Structural Steel
Reinforcing Steel
Granite
Limestone
Terra Cotta
Ornamental Bronze and Iron
Miscellaneous Iron
Carpentry—Rough
Sheet Metal
Fire—Retarding Windows
Roofing
Furring and Lathing
Plastering
Glass and Glazing
Painting
Cabinet Work—Interior Wood Trim
Hollow Metal Trim
Marble
Mosaic Tile
Composition Floors
Elevators
Hardware—Finish
Electrical Wiring and associated work
Ventilation—Mechanical
Heating
Plumbing and Drainage
Refrigerated Drinking Water System
Vacuum Cleaning
Light Fixtures
Interior Decoration
Furniture and Equipment

This list is not intended to be complete but is given as an indication of the possible classification of the subject matter of the various sections, arranged somewhat as they will be used in the sequence of construction operations.

THE specification writer must bear in mind the various requirements resulting from decisions of the National Board of Jurisdictional Awards, recommendations of the American Institute of Architects with respect to classification of the several branches of construction work and the recommendations of manufacturers as to how their materials may best be specified, whether in some one particular branch or separately. Local customs will, of course, be a guide and perhaps the most important consideration will be based on the desire of the architect or owner to award contracts under the general contract or separate contract system.

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DEPARTMENT OF ARCHITECTURAL ENGINEERING

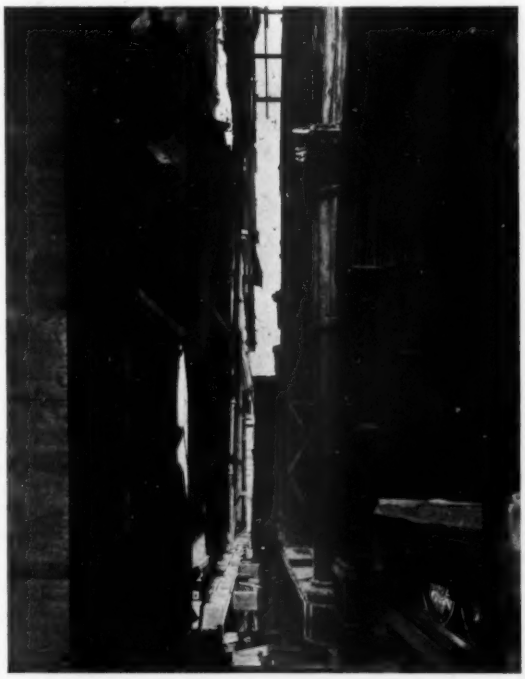
INTERIOR VIEW OF HOLY NAME CATHEDRAL, CHICAGO, AFTER ENLARGEMENT, BEFORE NEW WORK WAS DECORATED

HENRY J. SCHLACKS, *ARCHITECT*

ENLARGEMENT of HOLY NAME CATHEDRAL, CHICAGO

ADVOCATES of sound construction are gratified wherever a noteworthy operation on a large building justifies their insistence upon good workmanship. The cutting in two and shifting of parts of masonry buildings without damage, test workmanship as nothing else can and such tests advance the cause of good building. It is a fact that for every building which collapses and receives newspaper publicity, thousands subjected to equally severe tests endure them without visible distress. It is the truth that sound construction is the rule. The moving of ordinary buildings having interior partitions which help to stiffen them attracts notice only when the mover's work is badly performed.

The moving of a church with high thin side walls and no cross partitions is no ordinary task, and to perform it successfully reflects great credit on all concerned. Even when ordinary house-moving methods are used and no new inventions are called into play, the fact of the accomplishment is worthy of record to show that it can be done. The enlarge-



VIEW OF SANCTUARY OF HOLY NAME CATHEDRAL, CHICAGO, DURING ALTERATIONS. TAKEN FROM INTERIOR WHEN GAP WAS ABOUT THREE FEET WIDE

ment of Holy Name Cathedral, Chicago, involved the cutting in two of the sanctuary back of the transepts and the moving of the rear portion a distance of 14 ft. 2 in., with the insertion of a new panel. The part moved had a width of 130 feet and a height of 100 feet to the highest point of the roof.

The sanctuary, while large enough for ordinary use, was inadequate on great occasions. It was proposed to move the communion railing forward into the church, a perfectly natural idea from the standpoint of men who are not builders. Mr. Henry J. Schlacks, the architect placed in charge of the proposed work, suggested that some other way be studied and presented the following objections to the idea of moving the communion railing: It would extend into the transept; it would displace front pews which belonged to old families of the parish; and, the additional space thus acquired would not be sufficient to accomplish the desired purpose.

Measurements and studies made by Mr. Schlacks showed that an increase in length of the sanctuary equal to the width of one panel, would eliminate the side vestibules which then encroached on the sanctuary space and the area of the sanctuary would be increased one-half. This was what was needed and it was found that there was sufficient space between the rear end wall of the sanctuary and the parochial residence to admit the additional panel. The suggestion was then made that the end of the sanctuary be moved back and the panel be inserted, a solution so unexpected and novel that it was considered long and carefully before approval was given.

It took one year to discuss the matter, prepare the plans, build all required foundations, put the beams, blocking, rollers, etc., in place, and cut the building in two. The actual moving was done in seven hours during one working day. The moving crews were called at intervals for seven weeks before the actual moving day arrived. Each time some unforeseen emergency necessitated further precautionary steps for it was felt that no chances should be taken.

LENGTHENED SANCTUARY OF HOLY NAME CATHEDRAL, CHICAGO. VIEW TAKEN BEFORE NEW WORK WAS DECORATED

On the interior four braced towers were erected, two on each side of, and close to, the cut, to carry temporary trusses which supported the ceiling and roof. The two rear towers moved with the part on the floor of which they stood, to carry the portion of the roof which was separated from the main structure.

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Screws seven feet long were used, each being manned by two men. Whistle signals were used, each screw being given a one-quarter turn when the whistle sounded, the time being well regulated and th screws turning simultaneously. The altar, furniture and statuary was moved with the structure without being disturbed.

The contractors had the good fortune to be able to complete all the preparatory work during the summer. The walls and roof were cut when weather

EXTERIOR VIEW OF SANCTUARY OF HOLY NAME CATHEDRAL, CHICAGO, WHEN GAP WAS ABOUT SEVEN FEET WIDE

conditions were at their best. A wooden shed covered with tar paper protected the vestibules and enclosed the space occupied by the enlarged vestibules during the progress of work in the interior. An ingenious arrangement of canvas curtains covered the walls of the sanctuary above the vestibule roof, as well as the roof of the sanctuary. The precautions taken to protect the interior greatly facilitated the progress of the work and prevented delays which might easily have occurred had less attention been paid to many small details.

DURING the progress of the work the architect was asked to examine the foundations of the interior marble columns in which there were fractures indicating movement. The architect found that all the towers leaned slightly in the direction of the tower, the latter being out of perpendicular nine inches to the south and fourteen inches to the west. The trouble was wholly in the foundations of the tower, the settlement of which pulled the walls and connecting structural members of the roof in such a manner as to disturb every interior column.

A decision was reached to put new foundations under the tower. The construction of the State Street tunnel, the top of which was forty feet below street level, was approaching the Cathedral and it was feared that the effect on the tower would be disastrous. Since the tunnel and new foundations would be under way at the same time the decision was reached to support the tower foundations on four caissons going to bed rock, a depth of 140 feet. These caisson foundations were at the time the deepest in Chicago, the average being about 100 feet.

A temporary foundation had to be put in to support a large number of bottle jacks with which to keep the tower vertical and to prevent it from sinking as the sinking of the caissons progressed. This temporary foundation of timbers and needle beams extended well outside the tower walls in order to remove the old foundations and obtain a clear space in which to sink the caissons.

The caissons were sunk in the way such work is usually done in Chicago. Circular holes were dug by hand and lined with vertical staves held in place by iron rings on the inside. These rings are in sections, bolted together at the ends. The excavated material is hoisted in buckets. The pressure of the surrounding clay requires fast work for each section a few feet in depth and the digging must go slightly beyond the lines in order to give time to place the lining. It is stated that the excavated material hauled away from a caisson is about twenty per cent. in excess of the actual contents of the hole. This, of course, together with drainage, causes a sinking of soil in the vicinity. In the case of the tower this sinking amounted to eighteen inches, which justified the expense of the temporary foundation with its jacks, which supported the tower at its original level until the new foundations resting on the caissons were completed. The work of sinking the caissons was continuous and at regular intervals the jacks were turned and the tower pushed back into place.

The spire on the tower is one of the highest in Chicago, and, because of this, together with the fact that the work was done in mid-winter, the operations attracted considerable attention. The total cost of moving the sacristy, putting in the new panel, importing marble for the new work, restoring columns to perpendicular and putting new foundations under the tower was $150,000.

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IRON AND STEEL

Concluding a Discussion of Steel Making Processes As Applied to Iron Manufacture *

THE American Society for Testing Materials is conducting a series of corrosion tests in charge of Committee A 5. The inspection report of Sub-Committee III is given in the Proceedings of the Society, Vol. XX, 1920. Sheets of unprotected iron and steel are exposed at Annapolis, Md., Pittsburgh, Pa., and Fort Sheridan, Ill. The exposure at Pittsburgh appears to be the most severe and the results are here considered. The sheets were exposed December 12, 1916, and inspections made after 10, 16, 22, 28, 35 and 41 months' exposure, the latter being made May 11, 1920. The material is divided into two groups, copper-bearing, which has more than 0.15 per cent. of copper, and non-copper-bearing, which has less than 0.15 per cent. of copper. The sheets tested are of No. 22 and No. 16 gauge steel. The latter does not indicate failures as soon as the former, due probably to the greater thickness. The results here given are confined to the No. 22 gauge sheets.

The copper-bearing group consisted of 146 sheets, divided into 15 groups. The performance of the different groups is as follows:

Puddled iron, containing 0.283 per cent. copper
22 months, 17 per cent. failed
28 " 33 " " "
35 " 33 " " "
41 " 17 " " "
100 " " "

Open-hearth steel, containing 0.179 per cent. copper
35 months, 11 per cent. failed
41 " 11 " " "
22 " " "

Copper-bearing pure iron, containing 0.190 per cent. copper
35 months, 55 per cent. failed
41 " 33 " " "
88 " " "

Copper-bearing steel, containing 0.227 per cent. copper
35 months, 14 per cent. failed
41 " 36 " " "
50 " " "

Copper-bearing pure iron, containing 0.260 per cent. copper
35 months, 7 per cent. failed
41 " 21 " " "
28 " " "

Copper-bearing pure iron, containing 0.304 per cent. copper
35 months, 14 per cent. failed
41 " 21 " " "
35 " " "

Open-hearth steel, containing 0.185 per cent. copper
41 months, 21 per cent. failed

Those sheets which did not fail after 41 months' exposure are designated, with percentages of copper, as follows:

	Copper
Copper-bearing basic open-hearth steel	0.244
Copper-bearing Bessemer steel	0.252
Copper-bearing acid open-hearth steel	0.237
Copper-bearing Bessemer steel	0.257
Copper-bearing Bessemer steel	0.533
Copper-bearing open-hearth steel	0.212
Copper-bearing open-hearth steel	0.268
Copper-bearing open-hearth steel	0.621

The average analysis of these sheets showed the presence of carbon, manganese, phosphorus, sulphur, silicon and copper in addition to iron.

Inspection and comparison of these results show that 53 per cent. of 15 groups indicated no failures and that they are designated as open-hearth or Bessemer steel. The seven groups which had failures showed the average percentage of failures in the steel groups to be 31 per cent., and of the iron groups 63 per cent. Of the groups which had no failures, the first four had from 0.004 to 0.008 per cent. of silicon; the last four had no silicon.

The non-copper-bearing group consisted of 84 sheets divided into 11 groups, which contained less than 0.15 per cent. of copper. The performance of these groups is as follows:

Low-copper open-hearth steel, containing 0.020 per cent. copper
16 months, 100 per cent. failed

Bessemer steel, containing 0.014 per cent. copper
16 months, 94 per cent. failed
22 " 6 " " "
100 " " "

Low-copper pure iron, containing 0.022 per cent. copper
16 months, 7 per cent. failed
22 " 93 " " "
100 " " "

Bessemer steel, containing 0.013 per cent. copper
16 months, 33 per cent. failed
22 " 67 " " "
100 " " "

*The first installment of this discussion appeared in the issue of July 6, 1921.

Open-hearth steel, containing 0.018 per cent. copper
22 months, 100 per cent. failed

Low-copper pure iron, containing 0.024 per cent. copper
22 months, 33 per cent. failed
28 " 67 " " "
100 " " "

Low-copper pure iron, containing 0.027 per cent. copper
22 months, 100 per cent. failed

Open-hearth steel, containing 0.082 per cent. copper
22 months, 25 per cent. failed
28 " 25 " " "
35 " 25 " " "
41 " 25 " " "
100 " " "

Low-copper wrought iron, containing 0.020 per cent. copper
28 months, 100 per cent. failed

Copper-bearing pure iron, containing 0.139 per cent. copper
35 months, 50 per cent. failed
41 " 50 " " "
100 " " "

Bessemer steel, containing 0.133 per cent. copper
No failures

An inspection of the performance of these non-copper-bearing groups does not disclose any material difference in resistance to corrosion between "pure iron" and steel sheets. A comparison of the performance of these two groups of metal indicates that the inclusion of copper in the metal, both iron and steel, has a definite value in the prevention of corrosion. The use of these various materials is largely an economic problem and the final specification will be determined by the cost, based on a true comparison of all the elements involved.

FILING and FINDING of CORRESPONDENCE and DATA

EARLY in the career of every architect the need arises for some way to keep track of prospective business and business in hand. The following method was devised a number of years ago by a man in private practice and it has always worked well. One outstanding benefit is that all letters go at once into the regular file and the necessity for a number of "On hand," "Future," etc., files is done away with.

This man had lightweight sheets, 8 1-2 x 11 in., printed as follows and tabbed:

Structure .....Date .....
City .....State .....Job No...
Owner .....
Addres. .....
Architect .....
Address .....
Engineer .....
Address .....
Contractor .....
Address .....
Correspondence filed under.....

Remarks:

....

The space for Remarks occupied about half the sheet.

When correspondence begins one never knows when it will develop into something worth while; therefore, every letter should be filed so it may be found readily. When the system here mentioned was started the printed sheets were 4 x 6 inches, and contained no lines for Architect and Engineer and no space for Remarks. The sheet in its present form is the result of experience in the offices of architects, engineers, contractors and dealers in building supplies.

It will be noticed that there are six headings: Structure, Location, Owner, Architect, Engineer, Contractor, of which at least four are of importance. Assume that a prospective client writes a letter about a certain structure, thus beginning a correspondence. A carbon sheet is inserted in the pad and the lines giving information about the structure, the location, the owner and date are filled in; the name of the owner being also written on the line telling where the correspondence is to be filed. After removing the carbon sheet a heavy red pencil line is drawn under structure on the first sheet and under state on the second sheet. Each sheet is then filed in a vertical letter file, as indicated by the red line. Thus, from the start, the practitioner begins folders for structures, the importance of which is only fully appreciated after many years. A folder is also prepared for each state from which letters come, the cities being filed alphabetically in state folders. No folder is prepared with a heading Owner, for the two sheets mentioned serve merely to cross index correspondence with the owner. Thereafter, when a letter is received, the files are searched under name of the writer to determine whether there has been previous correspondence, all earlier letters being placed

with the last letter before answering. It is important that all correspondence relating to a job be placed under one name, the one first selected. Letters from other people should have this name and the job written at the top of the sheet in red to indicate where they must be filed.

After a while other names will come in of engineers and contractors connected with the work and new cross reference sheets will be filled with these fresh data, the earlier sheets being removed from the files and destroyed. When all data are filled in there will be the following folders containing only the cross reference sheets; Structures, State (each state), Owners, Architects, Engineers, Contractors and on each sheet under Remarks will be such historical data as one may need. Each sheet points to the name under which all correspondence will be found for each job. To insure each sheet going back into the proper folder a heavy red pencil line is drawn under the proper name, but one red line appearing on each sheet.

The convenience of such a system becomes more apparent the longer it is in use. If an architect is asked, for example, what he has done in a certain state he can open the folder for that state and show his list of structures. Asked what he has done in school houses, the School House folder contains the answer. The name of a structural engineer or perhaps the name of a contractor is mentioned and a reference to folder, Engineers, or to folder, Contractors, tells at once whether he has had business connections with them. The cross reference sheets are made at the time correspondence is answered and are filed in the regular letter file, thus doing away with special index cards of varying sizes, which are seldom properly made out, or, once started, kept up.

In a building material dealer's office, from which a number of traveling salesmen operated, this system was introduced with great advantage. A salesman announcing that he would be in a certain city upon a certain date would find on arrival an envelope from the main office, containing slips of paper, one for each man in that city with whom correspondence had been held, containing a resume of all correspondence with him. Prospects were listed in the same manner, and the data sent to the salesman.

A well-known structural engineer adopted this system several years ago to get business and keep track of resulting correspondence. Later he adapted it to preserving and filing data clipped from periodicals, or, copied from them, in addition to keeping track of his own work. His letter file then became an encyclopedia of work done during the period he has been in business. A number of architects followed the same plan for forming reliable reference lists of active building owners, of engineers, of contractors and of notable structures, in addition to lists of their own former business connections or associates and their own work. The system has proven to be one which may be kept up with a minimum of trouble and is adapted to large as well as to small offices.

Preventing Mortar Stains on Masonry

BROWN stains on limestone masonry arising (presumably) from action of the mortar are being studied at the Bureau of Standards in Washington, where two methods of preventing this staining are under investigation. The first is the use of a colorless waterproofing material on the limestone at the contact face of the mortar, the action of which is to prevent the passage of water through the mortar and into the stone in such a way as to carry the staining material with it. Preliminary tests indicate that most of the staining is prevented by this means. A number of British architects specify a thin coating of pure lime putty to prevent contact of masonry laid up in cement mortar, with Portland stone. This is claimed to work well and has been in use many years. The second method consists of applying a removable porous coating on the exposed face of the limestone wall. The stains then come through the coating, form on its outer surface and later on are removed when the coating is removed, while when forming directly on the stone surface they are difficult to remove because the staining material is insoluble. The method is expected to be of some value, as most of the stains form during the erection of the masonry.

Laminated Beam Tests

CONTINUATION of tests on laminated beams is reported to be under way at the Forest Products Laboratory, Madison, Wis. Reports on the tests, which were carried on last year, have just been printed and are now ready for distribution.

Mill Construction Bulletins

THE National Lumber Manufacturers' Association, Chicago, Ill., have added to their Series E-1 Heavy Timber Mill Construction, bulletins on basement floors, roofs and roof coverings, and floor beam charts for mill construction design.

These bulletins are now ready for distribution, together with pamphlets, which give in convenient form information on maximum joist and rafter spans for conditions met with in ordinary construction.

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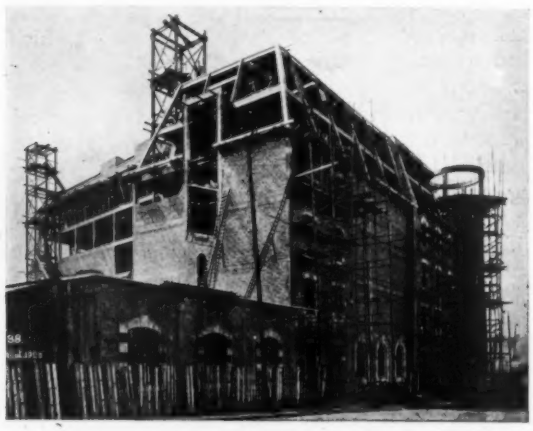
A FRENCH COLD STORAGE PLANT

THE cold storage plant shown in the accompanying cut was recently built in Paris for the Paris-Orleans Railway Company. The dimensions were not given by our correspondent, who merely stated that the water tank is 100 feet above street level. The type of architecture does not seem suitable for a cold storage plant from the American point of view, and herein lies the difference between French and American cities. In France the city is regarded as an architectural en-



COLD STORAGE PLANT OF PARIS-ORLEANS RAILWAY DURING CONSTRUCTION

tity and, while allowance is made for some degree of originality, good taste is conserved by requiring in each block a similarity of treatment of facades. If a commercial establishment is erected in a zone reserved for homes a good and sufficient reason must be shown to obtain a permit. The permit is given only after plans are made which harmonize with the surroundings. Even in a strictly commercial zone a building must conform to the architectural treatment planned for the street or open space on which the building fronts.

A height limit is fixed for cornice lines in all French cities and above this line additional stories may be built within sloping roof lines fixed by law. This cold storage building has a structural framework of reinforced concrete and the designer's treatment of his roof problem was very simple as the photograph shows plainly. The main point of interest in the building is the wall construction.

ALL walls are carried on concrete girders and have a total thickness of 13 inches, made up of two 4-inch brick shells enclosing a 5-inch space. This space was filled with compressed cork blocks 4-in. thick. Cellular material being ideal for insulation the shells consist of porous cinder concrete brick. Each brick becomes a cellular unit when surrounded by mortar, which prevents passage of air. The interior faces of the hollow space were covered with cement mortar before placing the cork. When the walls were completed both sides were covered with cement mortar. The walls therefore consisted of two shells of small cellular units, each one perfectly sealed and a 4-inch thickness of cork, than which no better insulating material exists.

WITH characteristic French thoroughness an investigation was made of proposed methods of plastering to be certain of having the most dense covering possible. The tests showed that mortar placed by the cement gun was most impervious, possessed the greatest adhesion and when dry was most free from cracks. The saving in cement, which is high priced in France, was about 25 per cent. as compared with cement mortar of the same proportions mixed and placed by hand.

Two cement guns were used, each with a crew of 4 men, each crew covering an average of 2700 sq.

COLD STORAGE PLANT OF PARIS-ORLEANS RAILWAY, COMPLETED

ft. in 8 hours. Each coat had a thickness of from 5/8-in. to 7/8-in., that forming the wall surface of inside rooms being trowelled to an even thickness and smooth face. The guns were placed on the ground level near the main entrance, the 300 feet of hose going up through the elevator shaft. The maximum height at which the nozzle operated was 100 feet and the air pressure was about 65 pounds.

All interior partition walls for the storage chambers are of the same construction. Tests made after the work was completed showed that the loss of cold air was remarkably low and for this the extreme density of the air sealing plastering must be given much of the credit.

BOOK REVIEWS

REINFORCED CONCRETE DESIGN. Vol. I, Theory, by Faber & Bowie. (2nd Ed.), 6 & 9 ins., 332 pp., 164 figs. in text. Vol. II, Practice, by Oscar Faber, 6 & 9 ins., 246 pp., 89 figs. in text. Cloth. New York, Longmans Green & Co.

THE underlying theory of reinforced concrete has been so written up and discussed that there is apparently nothing new to be said, for there is a dreary similarity in all text books on the subject and in each case the same authorities are quoted.

The work, however, under review is entirely different from the general run of treatises or texts on reinforced concrete and the reviewer is glad to see the second volume and the revised edition of the first volume. The first edition of the first volume appeared in 1912 and created a mild sensation, for after giving the usual basic facts and taking up the design of ordinary beams and columns it broke into a new field. In the second edition the authors state that few changes have been made and then, with evident satisfaction, state that many of their formulas for bending moments in beams of long spans were adopted by the London County Council, in regulations for reinforced concrete frame buildings. Volume II is a new book.

The new field which the authors entered was one in which adequate treatment was given of the many factors which differentiate the design of monolithic reinforced concrete frames from the design of non-continuous steel frames. Such details were at that time treated in an empirical way, or else discussed in a very unsatisfactory manner in the usual text books, so Faber & Bowie met with a hearty reception. Owners of the first edition of the first volume need not discard their copies but purchasers of the second volume should also own the first because of the many references made to the earlier chapters on theory.

The second volume amplifies the treatment of bending moments in beams and columns, taking into account stiffness of connections, of loading, etc., and gives tables and diagrams by means of which the moment may be found in any part of a beam or column, with any ratio of live to dead load and any distribution of load. In this volume there is also an excellent treatment of a subject usually neglected in ordinary text books, namely that of unequal spans of continuous beams. There is also a discussion of Faber's later theoretical and experimental work on the shearing resistance of reinforced concrete. It is styled "Practice" because of labor saving diagrams used to simplify the application of the formulas presented in the earlier book, now styled "Theory."

This work does not say one word about the design and construction of arch bridges; the section on chimneys is hardly more than a collection of hints of value to a man well posted on the design of reinforced concrete; the chapters on reservoirs, water towers and retaining walls are adequate; there is nothing said about the design of sewers, culverts, high masonry dams, etc. It is a work intended for the designer of buildings and the chief merit it possesses is that it gives in easily understandable form, and with practical methods for handling, the underlying theory of unbalanced moments and handles bravely subjects the average writer of the average text book apparently finds too difficult to present satisfactorily. It is a treatise and manual for the man who likes to know something more about his work than barely enough to handle the simple problems by "good enough, practical formulas." It is the sort of book the up-to-date man likes to read and use. The mathematical demonstrations are placed in appendices, the pages of text being no more difficult to read than are those of any good text book.

THE SLIDE RULE: A PRACTICAL MANUAL. By Charles N. Pickworth. 17th Edition. 133 pp., illustrated, size 5 x 7. New York: Isaac Pitman & Sons.

THIS work has been a standard for so many years that a new edition may be looked for with the unfailing regularity of a calendar. Every type of slide rule in ordinary use is described with directions for use. Used in connection with the usual instruction books given by manufacturers of slide rules, it should enable one to become expert in the use of this indispensable tool.

STRUCTURAL DEFECTS INFLUENCING THE SPREAD OF FIRE. Suggestions for their Elimination and Protection. Boston, Mass.: National Fire Protection Association. Pamphlet; 6 x 9 ins., 18 pp., il.

THIS is a 1921 reprint of a 1916 report prepared by the Committee on Manufacturing Risks and Special Hazards of the National Fire Protection Association. It should be in the possession of every architect.

FACE BRICK BUNGALOWS AND SMALL HOUSE PLANS. Four portfolios issued by the American Face Brick Association. Pamphlets; 8½ x 11 ins. Pub. by the Association, Chicago, Ill.

THESE pamphlets containing from 14 to 20 pages each are interesting examples of trade literature. They deal with houses of from 3 to 8 rooms.

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REVIEW of the CONSTRUCTION FIELD

With Reports of Special Correspondents in Regional Centers

Construction Needs a Free Loaning Market

EVIDENCE multiplies day by day that the key to a general revival of industry is the building industry. Construction, as recent government reports show, is one of the principal industries of the United States, twenty-seven per cent. of all expenditures in normal times being for building labor and materials. This important industry is tied up because of ultraconservatism in banking circles. The bankers say they are afraid of a sudden drop in labor and material costs such as occurred in farm products.

Let us examine the facts. The farmer is not able to control his production from month to month and in this one item is at a disadvantage compared with the manufacturer. After the seed is in the ground he gives his farm all the care he can and it is not until the harvesting is under way that he knows whether he wins or loses. His products being at the mercy of uncontrollable causes give gamblers an opportunity to play with him and he is always a victim of speculation and speculators. During the war his production was stimulated by a price guarantee and the sudden ending of the war robbed him of his international market and compelled him to compete with millions of European peasants who turned from fighting to farming. Bountiful crops all over the world with the market reduced from 500 million to 110 million people, the drop in prices of farm products gave new proof of the truth of the law of supply and demand. An important fact is that prices of farm products change quickly and the changes are considerable.

There can be no such sudden and large changes in construction work. The country is four years behind in a normal building program. Before war demands caused a sudden stoppage of private construction reports were constantly being received of a shortage in building mechanics and laborers. These men, the most intelligent of all workmen, found steadier employment in factories and shops, places where intelligence is at a premium. War work made the greatest drafts on his class of labor and nearly all who left the ranks of building artizans will return to such work reluctantly. There is too much lost time in the building trades and the good daily pay does not give a sufficient annual return. The shortage of labor felt in 1914 will be more seriously felt when construction activity is resumed. The men now engaged in construction work are apparently fairly busy all the time. It will take several years to train new workers and the present immigration laws will keep European trained workers out. A marked reduction in wages can hardly be expected for the next five or six years.

Stocks of building materials are low and the immediate resumption of building on a large scale will have as an immediate effect a stiffening, not a lowering, of prices. Prices will remain high until a large demand creates new sources of supply and the market becomes flooded. Natural lowering of prices will occur through competition after the present building shortage is made good and not until then.

BEFORE the war there was experienced a shortage of labor and materials in merely building to meet normal demands. Today we must work on a program twenty-five per cent. greater in order to keep up with normal demands and supply within five years the unfilled needs of the past four years. If we are caught up in five years this fixes the date when prices will be perhaps fifty per cent. lower than they are today. No one believes the country will be caught up in needed construction short of ten years, because it will always be difficult to obtain enough labor and enough materials to supply demands as a resumption of construction will start everything else.

There is something wrong and it can all apparently be laid at the doors of the bankers. These gentlemen claim to be timorous and fearful that money loaned on buildings may be loaned on security constantly depreciating in value, not alone because of ravages of time but because of falling prices of material and lowering wages. This argument would be impressive were it not for the fact that loans are made from time to time at usurious rates. If the loan is safe at a usurious rate it should be safe at a reasonable market rate. If there is extraordinary danger in making loans on new building construction then the bankers should make no loans of this sort.

The country needs about two million buildings today in addition to the normal demand. There are several million workers unemployed. Why not build houses and start the wheels of industry turning so there will be no unemployed to feed in charity this coming winter? The only need is the opening of a freer loaning market. The high cost of money is today a greater drawback to active building work than high wages and high cost of materials. The bankers understand all the conditions and know their loans will mature long before lowered costs will affect buildings started within the next two years. The need for buildings and the present high rents bring new would-be borrowers on the market every day who are willing to pay high interest but who balk at abnormal charges disguised under the name of commissions.

THE BUILDING SITUATION in CHICAGO and the MIDDLE WEST

(Special Correspondence to THE AMERICAN ARCHITECT*)*

CHICAGO is destined to stand supreme among the realty markets of the nation and to enjoy the resultant activity and sane leadership in building and architectural activities.

This is the inspiring message brought to Chicagoans by the fourteenth annual conference of the National Real Estate Boards which recently closed after a most successful meeting. In spite of the heat engulfing the country, making travel of all things most to be shunned, attendance at the convention was the largest in history and all previous records were shattered for similar gatherings of building clans.

The idea of Chicago's coming pre-eminence is not a new one to those within her gates. Realtors, architects and builders have long felt the confidence that this leadership was coming and this confidence which is now molding itself into reality has been recognized by a great national gathering of the trade itself.

Chicago's advancement to first place will, of course, be largely contingent upon her becoming the greatest city in the country. This, realtors declare, will not require more than a decade or so.

In the meantime, the Chicago realtor has to console himself with a steadily, rapidly and naturally developing market.

AFTER devoting a month of study to Chicago builders' pacts and wage agreements, Judge K. M. Landis, in conference, has ordered all existing agreements swept aside in one of the most drastic steps ever taken in the relationship between unions and contractors' organizations.

The Landis plan for a uniform working agreement between employers, union labor and builders has been accepted by all three of these groups, with a few minor exceptions. It is estimated that final settlement will release $5,000,000 worth of building.

William Schlake of the Associated Builders, Thomas C. Kearney, president of the Building Trades Council, and E. M. Craig, secretary of the Building Employers' Association, have all responded to the proposition submitted by Judge Landis.

Uniform agreements have been recommended as a substitute for the separate compacts which have in the past been negotiated with the Chicago Building Trades Council.

Suggested revisions which are expected to be approved within the next few days and which were submitted by Judge Landis include the following provisions: No union man should strike because a non-union man of another trade is employed on the job under penalty of not less than $25.

In case of scarcity of union labor, non-union men should be permitted to work until such time as union men may be secured.

Employers not affiliated with either employers' organizations making this agreement with the building trade, should enjoy the benefits of its provisions upon payment of a sum to be determined later.

Union men should be permitted to do jobs of any trade, providing such work does not require more than half an hour of any day.

Employers and contractors should be permitted to work on their own jobs if they wish.

"I ask you to study these principles and be prepared to fix the terms of your agreements to comply with them as much as possible, and when you cannot agree upon any specific item to submit your several disagreements to me, with explanations attached thereto," says Judge Landis.

Following are the principles as outlined:

Article 1. Monopolistic elements of associations or unions are intolerable unless:

1. The public is served more economically with them than without them.
2. Anyone qualified may join them without hindrance or discrimination.
3. They serve anyone on demand without discrimination.
4. Sufficient apprentices be taught to supply enough skilled managers and workers.
5. Working rules and conditions eliminate waste of time, effort and material; increase in quality and quantity of product; encourage improved methods, materials and appliances; produce increased skill and contentment of the workers; help to preserve peace in the community.

Article 2. Other things being equal, trades should have higher wages, or wages above the average—

1. If the work is more hazardous.
2. If greater skill is required.
3. If a longer term of apprenticeship is required to become proficient.
4. If the work is intermittent or unsteady due to weather or seasonable demand.

CHICAGO'S big show for home buyers opened on August 1 in the Leiter building. The Housing Chautauqua and the Home-Complete Exposition will be a big public school at which the man or woman planning to build a house or the contractor planning to build a whole row of houses can question the experts with the privilege of talking right back at them.

Just the minute that Judge Landis announces that he has brought the contractors and building trades unions to agreement, construction of every kind is expected to start with a rush. Plans should be made ready now, according to Frank E. Davidson, president of the Illinois Society of Architects, who was scheduled to deliver the opening address at the Housing Exposition.

Though the list of speakers is still growing for this conference, it now includes Henry K. Holsman, former president of the American Institute of Arch-

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itects; Charles Herrick Hammond, chairman of the Institute committee on Small House Planning; Leslie Allen, housing director of the Portland Cement Association; Lionel Robertson, art director of the Tobey Furniture Company.

Completed bungalows and cottages, painted, furnished and surrounded by shrubbery, with price tickets attached, will be in the exhibit.

Architects, contractors, material dealers, union workers and home owners are co-operating in planning this first permanent own-your-own-home show.

Effort is to be made to permit the home seeker to see his house before buying and to order a new home as he orders a suit of clothes by knowing what it will cost and what it will look like.

CHICAGO'S home builders are plugging away despite the tieup of construction work in general and nearly 2,000 residence building permits have been issued thus far during 1921 despite the paralysis of building conditions in general due to the labor and employer war.

Though agreement is momentarily expected among the builders, which will start all construction work booming, at the same time it is announced that further indictment of labor leaders and material men whose names will create a surprise may be expected within a few days.

For the week ending July 21, 175 building permits were issued in Chicago for work which will cost $1,628,000. This shows a most healthy condition when compared with 61 permits for the same week in 1920.

Real estate transfers have fallen off to a very slight extent over the corresponding period of 1920, but some important transfers are reported. Apartment houses are changing hands at good prices in all sections of the city. The sum of $300,000 was paid by Albert Eastman for the Birchwood Beach apartments on Sheridan Road. The Grennan Cake Company has purchased a four-story factory building and five other structures on South Oakley Boulevard.

A million dollars has been paid by S. W. Straus & Co. for the ground under the LaSalle Theatre, loop real estate that in 1882 was sold for $12,500. On this site and the property adjoining at Clark and Madison streets a $6,000,000 bank, theatre and office building is to be erected. A 400 foot tower is under consideration, the same height as the tower of the new Wrigley building. The structure will be 21 stories high, which is the legal limit, and will be in the very heart of the loop.

BUILDING CONDITIONS on the PACIFIC COAST

(Special Correspondence to THE AMERICAN ARCHITECT)

SEATTLE.—There have been many changes in the construction outlook during the past fortnight. Lumber is at bottom, the steel market is suffering from too much price cutting to assist the demand and as a result the light inquiry for sheets, pipe and bars has fallen to the minimum. Many jobbing houses and retailers of construction materials have charged off generously in order to help in bringing back normal conditions at an early date, although it is not expected that conditions will show any material improvement to the end of the year. It is felt, however, that the worst has been lived down.

Cement manufacture on the Pacific coast is about 30 per cent. of capacity. Approximately $3,000,000 will be spent by Washington alone in hard surface road construction, and cement manufacturers seem to feel that it would be no object to them to quote lower prices in the building trade to get business which they cannot handle. These plants seem to have discounted any large building activity this season and are holding their market level on the highway basis alone.

There has been increasing activity in offers of Belgian steel for the building trade, but in view of the falling domestic market investors are indifferent. Belgian bars were offered on the coast at $1.75 f.o.b. shipside ready to discharge, but manufacturers' agents got no offers. It was pointed out that before contracts could be closed and delivery made on the coast the Pittsburgh prices would have fallen to this or a lower level.

Cement sales are about 30 per cent of normal, and this 30 per cent figures with rather startling frequency in a number of construction lines, more truly representing the market support and demand than any other.

Inquiries from coast jobbers to a number of the mills as to quotation on several carloads of sheets, pipe and nails brought the answer "Let conscience be your guide." Galvanized sheets have fallen to $4.25 and blacks to $3.25 f.o.b. Pittsburgh. Buyers point out that if the stock has gone so low it will go lower, and they are cheerfully idling. Brick is steady. Cement is now $3.85 per barrel at warehouse, but jobbers say the market should, to fit in with conditions, be $3.

About 50 per cent of the fir lumber mills of the North Pacific coast territory resumed operations following the annual Fourth of July close down. Mills announced on closing that they will not resume until the market had lifted somewhere over net costs of production, but wholesalers say this is "the annual joke" during a lean season. It was estimated that 70 per cent. of the capacity will have been running by August 1.

Production of 107 mills in operation for one week was 49,852,000 feet, or 35 per cent under normal. For delivery into the eastern construction trade placements were 1,165 carloads and loadings 1,275 cars, reducing the unshipped balance for that account to 2,942 cars. Shipments intercoastal to New York and Baltimore were 3,762,000 feet, with new orders totalling 2,712,900 feet for the same account.

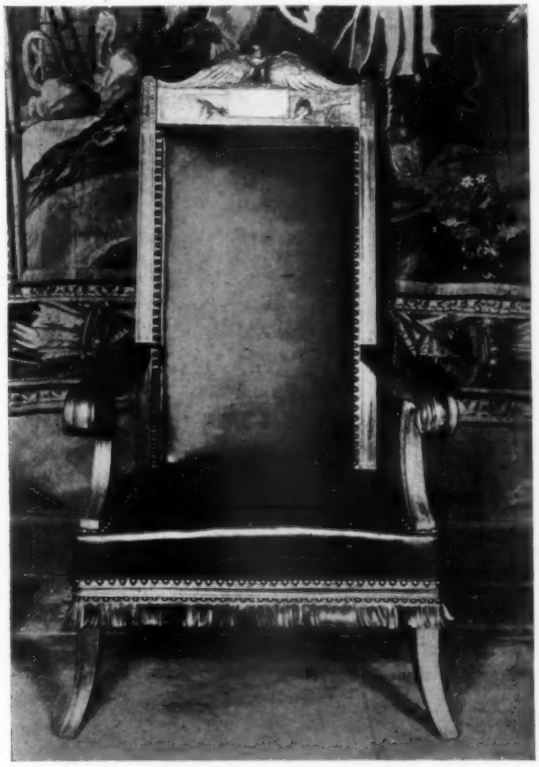
Mill prices were $49 for vertical grain flooring, $18 to $25 for slash grain, finish at $52 to $53 and ceiling at $20. Drop siding averaged $21 and boards and shiplap $10.50, common dimension $10.50 and plank and small timbers $13.50 to $14.50.

There has been a good market for store spaces in the business sections of coast cities, but a tendency toward vacancies in the suburban sections. A canvass of 37 principal office buildings in Seattle shows that there are vacancies in these buildings of slightly over two per cent. The percentage of vacancies in all the office buildings will not exceed 3 per cent.

President Harding's Chair

IN view of the fact that the Cabinet chair presented to President Harding was designed, as it of course should have been, by an architect, we wrote Mr. Alfred C. Bossom, the architect who designed it, for a photograph and description of the chair.

Mr. Bossom entertainingly writes with reference to this historical piece of furniture as follows:



PRESIDENT HARDING'S CHAIR
Designed and executed under the supervision of Alfred C. Bossom, *Architect*

"When President Wilson left the White House certain of his friends bought and presented to him the chair he had so many times occupied at the head of the Cabinet table.

"It having become necessary to provide a chair for President Harding, his editor friends all over the country raised a fund to supply a new chair. This chair they asked me to design.

"The wood the chair is made of is a part of the schooner 'Revenge,' one of the first ships of the first American Navy, built on Lake Champlain to repel the advances of the British. This boat was built by the British, but was captured from them and taken to Whitehall by the Colonists and there refitted. It was one of the main vessels on the American side in the battle of Valcour, from which fight it retreated and returned to Ticonderoga in company with two smaller vessels, the 'Trumbull' and the 'Enterprise.' It was one of the ships of Benedict Arnold's fleet when he was defeated by Sir Guy Carlton in the battle of Valcour.

"The chair is symbolic of the collection and distribution of news. These points are symbolized by a hand grasping the electricity out of the air on the one side and a young woman blowing a trumpet, giving the news to the world on the other, under the protection of the American Eagle symbolizing the Government. The leather of the chair came off the hide of an Ohio steer. The chair was officially presented to President Harding on July 13th by a delegation of newspaper men."

The Architect and the School Building

AN architect, accomplished in the art of planning and designing school buildings, decided that the profession would appreciate a comprehensive book on the subject, written wholly from the architect's point of view.* He thereupon began the writing of such a treatise and the task was well under way when he awoke to the fact that his point of view was necessarily that of architects with considerable experience in school design. This was not the point of view of architects of lesser experience and he stopped his work to review personal experience, to place himself once more at the threshold of motive, the guide of good architecture.

He arrived at the conclusion that what differentiated his point of view from that of the junior members of the profession was his superior knowledge of school organization gained through experience. So the book was recast and 19 authorities aided him, for he wanted his treatise to approximate in form the manner in which his own experience

*School Architecture: Principles and Practices, by John J. Donovan, A. I. A., and others. 724 pp. 669 ill. 9x12 in. Cloth. New York. The Macmillan Company.

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had been gained. The book has come to this office for review and the writer, who himself has designed a few school buildings, found it so fascinating that it was hard to lay it down. There are 28 chapters by 20 authors, each an authority on the subject treated. The work of the contributors has been used by the architect-author as a basis for the discussion of the architectural features of school planning and design. The illustrations of typical schools for each of the classes discussed are representative of the best work of more than 50 American architects who are recognized as leaders in school architecture.

The author is an architect; one collaborator is a landscape architect; a third is a mechanical engineer; a fourth is an electrical engineer; a fifth is an architect, chairman of the National Education Committee on Standardization of Schoolhouse Planning and Construction; fourteen superintendents, principals and teachers, each one noted as a contributor to journals and as authors of papers on particular phases of school organization and administration.

The work is encyclopedic in scope and well written. No portion of it is dry, for the contributors know how to write and they write well. It is destined to be for many years the standard authority on School Architecture in America and will no doubt have a generous reception abroad where school architecture lags.

Annual Elections by Architectural Organizations

Illinois Society of Architects Elects Officers

AT the recent annual meeting of the Illinois Society of Architects, the following were elected: President, F. E. Davidson (re-elected); first vice-president, Herbert Hewitt; second vice-president, John A. Nyden; treasurer, John A. Armstrong; secretary, Ralph C. Harris, and financial secretary, H. L. Palmer.

Peoria Society of Architects Elects

THE following officers were elected at a recent annual meeting of the Peoria Society of Architects:

Frank N. Emerson, president; George H. Davis, vice-president; Clark W. Bullard, secretary-treasurer. The three officers with Dudley C. Chaffee and Robert J. Hotchkiss will constitute the Board of Directors.

North Dakota State Architects' Association Elects Officers

AT a recent meeting of the North Dakota State Architects' Association, the following officers were elected for the year:

President, G. R. Horton, Jamestown; vice-president, O. A. Braseth, Fargo; secretary-treasurer, R. R. Boyd, Devil's Lake.

The next meeting of the association was set for next December at Devil's Lake.

A. I. A., Illinois Chapter

AMERICAN Institute of Architects, Illinois Chapter, is the new name of the Illinois Chapter, American Institute of Architects, as changed around by a resolution adopted at a recent meeting.

Officers elected for the year are: Albert M. Saxe, president; Francis W. Puckey, first vice-president; Edwin H. Clark, second vice-president; John A. Armstrong, secretary. H. K. Holsman, retiring president, and Charles H. Hammond were elected to the executive committee.

New Jersey Society of Architects Elects Officers and Directors

AT the recent annual meeting of the New Jersey Society of Architects and the New Jersey Chapter of the American Institute of Architects, the following officers were elected: President, Harry T. Stephen; vice-presidents, Ernest F. Fougner and Clement W. Fairweather; treasurer, John F. Capen; secretary, Hugh Roberts. Fred W. Wentworth, W. P. O'Rourke and G. F. Drew were re-elected directors.

The retiring president, James O. Betelle, was elected director to fill the unexpired term of Mr. Fougner, and Stockton B. Colt will fill the unexpired term of Mr. Fairweather.

Dallas Architectural Club Elects Officers

AT the annual meeting of the Architectural Club of Dallas, Texas, recently held at the Arts Club, the following officers were elected for the year: Ralph Bryan, president; John Dehnert, first vice-president; Maurice Peterman, second vice-president; M. O. Carder, secretary; Walter C. Sharp, treasurer.

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PARAPET DETAIL—CHURCH OF S. VITALE, RAVENNA, ITALY